

AFRICA @ WAR 54

WAR OF INTERVENTION IN ANGOLA

VOLUME 4:
ANGOLAN AND CUBAN AIR FORCES, 1985-1987



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AFRICA @ WAR
SERIES

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Note: To simplify the use of this book, all names, locations and geographic designations are as provided in *The Times World Atlas*, or other traditional accepted major sources of reference, as of the time of the described events. For example, the modern-day Republic of Namibia is usually cited as South West Africa (SWA) because that designation of this territory remained in use in the English language while it was under South African administration, from 1915 until 1990 – despite the decision of the United Nations General Assembly from 1968, which changed its designation to Namibia. When mentioned for the first time in the text, aircraft and heavy weapons system designations are cited fully – including their designer and/or the manufacturer, official military designation and nickname: in the case of Soviet-made armament: this is followed by the ASCC/NATO-codename, which is then used through the text. The same principle has been applied to the Angolan and Cuban military terminology, most important details of which are provided in Table 1.

Abbreviations

AB	air base	FNLA	Frente Nacional de Libertação de Angola (Angola National Liberation Front)
AM	Aeródromo de Manobras (manoeuvre aerodrome)	FNLC	Front National pour la Libération du Congo (National Front for the Liberation of the Congo)
ANC	African National Congress (South Africa)	FOB	Forward Operating Base
APC	armoured personnel carrier	GenStab	General Staff (of the armed forces of the USSR, equivalent to the Joint Chiefs of Staff in the USA)
ASCC	Air Standardisation Coordinating Committee (US, UK, Australian and New Zealand committee for standardisation of designations for foreign [primarily Soviet] armament; its codenames were subsequently adopted by NATO, and are commonly known as 'NATO designations')	GVS	glavnyi voennyi sovetsnik (Russian for 'Chief Military Advisor')
ATGM	anti-tank guided missile	HQ	headquarters
ATMS	automatic tactical management system	IFV	infantry fighting vehicle
ATN	Agrupación de Tropas del Norte (Northern Group of Forces, FAR)	INS	instrumental navigation system
ATS	Agrupación de Tropas del Sur (Southern Group of Forces, FAR)	IRST	infrared search and track (system)
C3	command, control and communication	KIA	killed in action
CAP	combat air patrol	MANPAD	man-portable air defence (system)
CAS	close air support	MAOT	mobile air operations team (SAAF)
CIA	Central Intelligence Agency (USA)	MBT	main battle tank
c/n	construction number	MGPA	Marinha de Guerra Popular de Angola (The People's Navy of Angola)
CO	Commanding Officer	MGR	Marina de Guerra Revolucionaria (Revolutionary Navy, Cuba)
COIN	counterinsurgency	MiG	Mikoyan i Gurevich (the design bureau led by Artyom Ivanovich Mikoyan and Mikhail Iosifovich Gurevich, also known as OKB-155 or MMZ "Zenit")
COMINT	communications intelligence	MINFAR	Ministerio de las Fuerzas Armadas Revolucionarias (Ministry of the Revolutionary Armed Forces, Cuba)
COPE	Comando Operacional Estratégico (Strategic Operational Command, FALA)	MININT	Ministerio del Interior (Ministry of Interior, Cuba)
DAA/FAR	Defensa Antiaérea y Fuerza Aérea Revolucionaria (Revolutionary Air Defence and Air Force, Cuba)	MMCA	Misión Militar de Cuba en Angola (Cuban Military Mission in Angola)
DRC	Democratic Republic of the Congo (Congo-Kinshasa/Zaire)	MPLA	Movimento Popular de Libertação de Angola (People's Movement for the Liberation of Angola)
DTA	Direccao dos Transportes Aéros (Portuguese civilian Aviation company)	MRLS	multiple rocket launcher (system)
ECM	electronic countermeasures	NATO	North Atlantic Treaty Organisation
ELNA	Exército de Libertação Nacional de Angola (Angola National Liberation Army), FNLA armed wing	NCO	non-commissioned officer
FAC	forward air controller	NGO	non-governmental organisation
FALA	Forças Armadas de Libertação de Angola (Angola Liberation Armed Forces; armed wing of UNITA)	ODP	Organização de Defesa Popular (People's Defence Organisation: MPLA/FAPLA-controlled militia)
FAP	Força Aérea Portuguesa (Portuguese Air Force)	PLAN	People's Liberation Army of Namibia (SWAPO's armed wing)
FAPA/DAA	Força Aérea Popular de Angola/Defesa Anti-Aérea (Angola People's Air Force and Anti-Aircraft Defence)	PRC	People's Republic of China (or mainland China)
FAPLA	Forças Armadas Populares de Libertação de Angola (People's Armed Forces of Liberation of Angola)	RPG	rocket-propelled grenade (launcher)
FAR	Fuerzas Armadas Revolucionarias (Revolutionary Armed Forces, of Cuba)	RSA	Republic of South Africa
FAZ	Forces Armées Zaïroises (Zairian Armed Forces)	SAAF	South African Air Force
FLEC	Frente para a Libertação do Enclave de Cabinda (Front for the Liberation of the Enclave of Cabinda, Angola)	SADF	South African Defence Forces
		SA-2 Guideline	ASCC/NATO-codename for Soviet S-75 Dvina SAM system
		SA-3 Goa	ASCC/NATO-codename for Soviet S-125 Pechora SAM system
		SA-6 Gainful	ASCC/NATO-codename for Soviet ZRK-SD Kub/Kvadrot SAM system

SA-7a Grail	ASCC/NATO-codename for Soviet 9K32 Strela-2 MANPAD	SMMA	Soviet Military Mission in Angola
SA-7b Grail	ASCC/NATO-codename for Soviet 9K92M Strela-2M MANPAD	SWA	South West Africa (present day Namibia)
SA-8 Gecko	ASCC/NATO-codename for Soviet 9K33 Osa SAM system	SWAPO	South West African People's Organisation (insurgency in the former South West Africa)
SA-9 Gaskin	ASCC/NATO-codename for Soviet ZRK-BD Strela-1 SAM system	TAAG	Transportes Aéreos Angolanos (Angolan Air Transport, later TAAG, Angola Airlines)
SA-13 Gopher	ASCC/NATO-codename for Soviet ZRK-BD Strela-10 SAM system	TEL	transporter-erector-launcher
SA-14 Gremlin	ASCC/NATO-codename for Soviet 9M36 Strela-3 MANPAD	UAV	unmanned aerial vehicle
SA-16 Gimlet	ASCC/NATO-codename for Soviet 9M313 Igla-1 MANPAD	UNITA	União Nacional para a Independência Total de Angola (National Union for the Total Independence of Angola)
SA-18 Grouse	ASCC/NATO-codename for Soviet 9M39 Igla MANPAD	UNIMOG	UNIversal-MOTOR-Gerät (range of multi-purpose, all-drive trucks manufactured by Daimler and sold under Mercedes Benz)
SAR	search and rescue	USA	United States of America
SARH	semi-active radar homing (type of guided air-to-air missile)	USSR	Union of Soviet Socialist Republics (Soviet Union)
SDECE	Service de Documentation Extérieure et de Contre-Espionage (External Documentation and Counter-Espionage Service, France)	VDV	vozdushno-desantnye voyska (Russian for airborne troops)
Shilka	Soviet ZSU-23-4 self-propelled, radar-guided anti-aircraft gun	VTA	Voyenno-Transportnaya Aviatsiya (Soviet Air Force's Military Transport Aviation)
SIGINT	signals intelligence	VVS	Voyenno-Vozdushnye Sily (Soviet Air Force)
		Volga	S-75, Soviet radar-guided surface-to-air system, ASCC/NATO-codename 'SA-2 Guideline'

Introduction

The fourth volume of this mini-series is also the second to focus on the operations of the Angolan and Cuban air forces during the war that savaged Angola between 1975-1992. Specifically, it provides a review of the build-up of the Angolan air force, and the Cuban air force's contingent deployed in the country, as well as their combat operations from early 1985 until late 1987.

This conflict was an extremely complex affair, involving multiple nationalist movements and an even larger number of foreign powers – to a degree where almost all of the involved parties gave it a different name. In the West, it is sometimes called the Angolan War, or, more precisely, the Second Angolan War; in South Africa, it is generally known as the Bush War or Border War; in Angola, it is known as the War of Intervention, and in Cuba either as Internationalist Duty or, lately, the Unnecessary War. For the reader's easier orientation this volume follows the pattern of the previous three by starting with a brief introduction of who was whom in this conflict.

Government and Allies

The People's Movement for the Liberation of Angola (Movimento Popular de Libertação de Angola, MPLA) originally followed a leftist and nationalist ideology. After receiving very little help from the Union of Soviet Socialist Republics (USSR/Soviet Union), and the People's Republic of China (PRC/Mainland China) in the 1960s, it was defeated by the Portuguese in the early 1970s, and then nearly fell apart. Saved thanks to financial and material help from Yugoslavia and Algeria, it then survived long enough to attract Cuban attention in 1974. A year later, the MPLA established itself in power in Luanda with some help from Portugal, but mainly from Cuba, in time to declare Angola as independent in November 1975. Following a period of internal

turbulence, in 1979 the MPLA came under the control of a group of corrupt oligarchs led by José Eduardo do Santos that converted their government into one of the principal Soviet allies in Africa. During the same period, and thanks to extensive Cuban support and Soviet provision of arms, the MPLA's armed wing was massively expanded and reorganised into the People's Armed Forces for the Liberation of Angola (Forças Armadas Populares de Libertação de Angola, FAPLA) – the regular Angolan armed forces. From January 1976, the FAPLA included a slowly growing flying and air defence arm, the People's Air Force of Angola/Air and Antiaircraft Defence (Força Aérea Popular de Angola/Defesa Anti-Aérea, FAPA/DAA). To the MPLA and the FAPLA, the war of 1975-1992 became known as the War of Interventions (and thus also providing the title for this mini-series).

Launching Operation Carlota in the form of an 'intervention on invitation', and thus compliant with the UN Charter, in November 1975, Cuba deployed around 36,000 officers and other ranks of its Revolutionary Armed Forces (Fuerzas Armadas Revolucionarias, FAR) by March 1976, and did so for what are nowadays likely to appear rather naïve reasons – such as the struggle against colonial rule and imperialism. The Cuban military presence and advisory activities were controlled by the Cuban Military Mission to Angola (Misión Militar de Cuba en Angola, MMCA): subsequently, this body was mainly responsible for training the FAPLA and for running counterinsurgency operations, and had its members assigned to the mass of minor commands in the countryside. In addition to the MMCA, the FAR deployed a number of regular units, which were operated under a, *de-facto*, separate command (detailed description of which is given later in this volume). As well as ground forces, the Cuban military contingent in Angola included a sizeable portion of the

Revolutionary Air Defence and Air Force (Defensa Antiaérea y Fuerza Aérea Revolucionaria, DAA/FAR).

Originally reluctant to become involved in Angola, the USSR not only began selling arms to the MPLA/FAPLA, but also provided about 500 military advisors, arms and logistics support. Controlled by the Soviet Military Mission in Angola (SMMA), the majority of Soviet officers initially supported the build-up of the FAPLA/DAA. Despite the MMCA essentially ‘embedding’ itself within the FAPLA, and not only advising it but also fighting for it early on, by 1978 the Soviets took over as the top military advisors at almost all levels of the hierarchy of the Angolan armed forces: the SMMA not only planned all major FAPLA operations, but its members were present in all the headquarters down to the brigade and regimental level. However, contrary to the Cubans, and with the exception of minor detachments of special forces, the Soviets never deployed entire units of their armed forces in Angola, and before 1984, they hardly ever became involved in counterinsurgency operations (COIN).

Opposition and Allies

Thanks to the Cuban military intervention, advice and training provided by the MMCA to the FAPLA and secured by contingents of conventional units of the FAR, the MPLA established itself in control of around 90 percent of Angola by the end of 1976. However, it not only failed to completely neutralise political and armed opposition, but subsequently made a mass of strategic mistakes, driving ever more of the Angolan population into the arms of the insurgency.

The smallest of the original three Angolan nationalist movements to fight against the Portuguese in the 1960s and early 1970s, during the early 1980s the National Union for the Total Independence of Angola (*União Nacional para a Independência Total de Angola*, UNITA) crystallised as the main and most dangerous opponent of the MPLA government and its allies. Primarily consisting of the Ovimbundu ethnic group (dominant in southern and eastern Angola), UNITA was initially supported by the PRC. From 1975, it became a recipient of gradually increasing amounts of aid from the Republic of South Africa (RSA), the United States of America (USA), and other Western powers. By 1985, UNITA’s military wing – the Angolan Liberation Armed Forces (*Forças Armadas de Libertação de Angola*, FALA) – was not only trained by South Africans but was also receiving the direct support of the South African Defence Forces (SADF) whenever necessary. With the organisation of the FALA being described in detail in Volume 3, it is sufficient to say that as of 1985 overall command was still exercised by the Strategic Operational Command (Comando Operacional Estratégico, COPE), which controlled five fronts and 23 military regions. The mass of field forces consisted of part-time militia, organised into detachments of up to 150 troops, and totalling about 37,000 personnel by 1987. Gradually gaining in importance was the ‘Strategic Force’, which controlled about 40 semi-regular and regular battalions (each 250-1,000 strong), consisting of well-trained and disciplined light infantry, which reached a strength of about 28,000 by 1987. Finally, the insurgency had an artillery battalion, a unit operating a few captured T-34/85 medium tanks, at least five (later eight) penetration battalions (trained and equipped to operate well behind the enemy lines), and a well-developed network of training facilities.

Ruled by a minority of former European colons with help of Apartheid – a system of institutionalised racial segregation based on ideology of white supremacy – the RSA was, at least officially,

completely isolated on the international level, and subjected to an international arms embargo. In reality, the government maintained clandestine links to the USA, Great Britain, France, Israel and Chile and successfully presented itself at home and abroad as a ‘bulwark against the Communist expansion into Africa’. This was the pretext under which Pretoria launched a military intervention and quickly secured the southern part of Angola in 1975 (Operation Savannah), only to withdraw in early 1976, once it – temporarily – lost US support, and it became obvious that a take-over of Luanda would lead to a major showdown with what was perceived as the ‘Soviet presence’ (in the form of Cuban troops). Subsequently, the RSA found itself facing a wave of African nationalism in the form of insurgency by the African National Congress (ANC), and a similar nationalist movement in South West Africa – a territory under the South African mandate since the times of the First World War – in form of the South West Africa People’s Organisation (SWAPO). Establishing a system of major bases in southern Angola in the late 1970s, SWAPO and its military wing – the People’s Liberation Army of Namibia (PLAN) – launched numerous incursions into South West Africa, in turn provoking the RSA into deploying the SADF into so-called ‘externals’: offensives of limited scale and duration into southern Angola. While most of the latter were designed to destroy bases or at least force SWAPO and the PLAN away from the border, they resulted in continuously increasing engagement of the local FAPLA garrisons by the SADF and the South African Air Force (SAAF). Moreover, from 1978 Pretoria resumed its support for UNITA with the aim of preventing the MPLA/FAPLA from enabling SWAPO/PLAN to operate inside South West Africa. Nominally at least, the Lusaka Accord of 1984 ended the RSA’s involvement in Angola: however, the government in Pretoria remained determined not to be taken by surprise, and thus continued providing support to UNITA, just as the MPLA continued supporting SWAPO.

The other two Angolan nationalist movements played next to no role in the fighting covered in this volume. The bigger of the two was the Angolan National Liberation Front (*Frente Nacional de Libertação de Angola*, FNLA), led by Holden Roberto, exclusively consisting of the Bakongo ethnic group of northern Angola, and including its armed wing, the Angolan National Liberation Army (*Exército de Libertação Nacional de Angola*, ELNA). While the most dangerous rival of the MPLA as of 1975 – and presenting itself as an ally of the West and the USA in particular – the FNLA actually invested next to nothing into ideological work. Moreover, and although supported by the Central Intelligence Agency (CIA) of the USA, the ELNA was decisively defeated by the Cuban-supported FAPLA in early 1976 and played no significant role ever again.

The smaller – and, potentially more serious – opponent became the Front for the Liberation of the Enclave of Cabinda (*Frente para a Libertação do Enclave de Cabinda*, FLEC). Led by Henriquez Tiago, this was seeking the independence of the oil-rich Cabinda Enclave, which the Portuguese granted to Angola, although the area was surrounded by the Republic of the Congo ('Congo-Brazzaville') and the Democratic Republic of the Congo (former Belgian Congo or 'Congo-Kinshasa', and renamed Zaire from 1971 until 1997), and predominantly populated by the Bakongo.

War of Absurdities

While countless Western accounts have superimposed (and continue to superimpose) the USSR’s role in Angola in the 1970s and the 1980s, and the related ‘spread of Communism into Africa’

– often to a degree where the Cuban military intervention is misinterpreted as having been ‘undertaken on order from Moscow’ – with few exceptions during nearly four decades of the Cold War between the East and the West, the government of the Soviet Union was actually keen to maintain the status quo and avoid provoking Western superpowers. Correspondingly, the Soviets were initially reluctant to become involved in the country at all. Indeed, even the Cuban leadership took time to decide to support the MPLA. However, once the Cubans launched their military intervention the Soviets were left without a choice. The result was little other than so-called ‘mission creep’, and a war that can only be described as completely absurd.

The gradual expansion of both the Cuban and Soviet interventions went well beyond their original scopes. The Cubans continued supporting the MPLA for reasons related to the anti-imperialist ideology of their political leadership: the government in Luanda was following leftist and anti-imperialist ideology and thus convinced Havana that the Cuban involvement would help build up the nation from scratch and develop a ‘better’ – socialist – society. On the contrary, monitoring the situation entirely from the point of view of the ongoing Cold War, and perfectly aware that the MPLA was entirely out of condition to establish a ‘communist regime’, once in the country the Soviets did their best to establish themselves in positions of influence in Luanda, because they considered this to be their primary interest. However, the MPLA was not the least shy in retaining contacts and business links with major ‘capitalist imperialist’ corporations. Indeed, understanding that it lacked the know-how, technology and capability necessary to run the country and develop its economy, the ‘Marxist’ government actively sought cooperation with the ‘reactionary’ USA in particular and earned most of its income from sales of oil pumped by corporations like Gulf Oil from oilfields in the Cabinda Enclave. In similar fashion, the Angolan national airline TAAG was proudly flying Boeing 737 airliners. Ironically, the Cuban and Soviet involvement exposed Angola to the full spectrum of opposition from the West and South Africa, ranging from support for UNITA – which, at least nominally, was a movement of leftist African nationalists with anti-imperialist ideology, originally supported by the People’s Republic of China (PRC) – to periodic military interventions by South Africa. Ironically, these were not only causing heavy losses to the FAPLA but also massive damage to the Angolan economy. Precisely these factors also supported both Havana and Moscow’s point of view that not only was their military presence and advice necessary, but that the FAPLA must be developed into a major conventional armed force, capable of fending off possible invasions from the north – i.e. Congo/Zaire – and from the south, by South Africa. Ultimately, the government in Luanda maintained itself in power thanks to exports of oil, gas



FAPLA troops celebrating their victory over the FNLA after reaching the border with Zaire in February-March 1976. (Albert Grandolini Collection)

and diamonds to the West, while the threat of external invasions and a major insurgency supported by the West resulted in Cuba and the USSR expanding the FAPLA from a total of about 40,000 officers and other ranks in 1980, into more than 120,000 by 1985 – which made it one of the largest conventional military forces on the African continent. Perhaps the most obvious example for how absurd the situation became is the fact that by 1985 Soviet-made Mi-17s and Mi-25s bought by Luanda and paid for by royalties from export of Angolan mineral wealth, flew protection for offshore oil-rigs run by Western companies, the taxes resulting from which were – amongst others – spent to sponsor Western aid to UNITA.

Angolan, Cuban and Soviet Armed Forces and Air Forces in Angola, 1985–1987

As detailed in Volume 3, in the light of experiences from 1983 and 1984, Moscow made the decision to accelerate delivery of arms to Angola and support a rapid expansion of its air force. Consequently, and while the FAPA/DAA grew only slowly during the first decade of its existence, it experienced a period of unlimited growth over the following two years: by 1987, it was revamped to a degree where it was hard to recognise for many of the Cuban veterans that had served in the country a decade earlier. In the Western public, where during the 1980s there was relatively little knowledge about the exact designations of specific Soviet-made weapon systems (not to mention the organisation and equipment of such an obscure air force as that of Angola, and the Cuban contingent assigned to it), related reporting resulted in emergence of countless myths. Moreover, Angolan and Cuban documentation and publications released ever since do not really help make it clear who was fighting where and when, or flying what, as of 1985–1987. The following chapter thus provides a summary of the geo-strategic position, organisation, capabilities and intentions, equipment and other important details of the FAPLA and FAPA/DAA, the FAR, DAA/FAR and the MMCA, and the SMMA during the period covered in this volume.¹

New Bosses in Town: SMMA

While the first contact between the USSR and the MPLA was related to poetry, and while Moscow also squandered resources to send busts of Vladimir Lenin, or aircraft full of brochures with Brezhnev's speech made to the February 1976 Congress of the Soviet Communist Party to Angola – in addition to about two dozen shiploads of main battle tanks (MBTs), armoured personnel carriers (APCs), infantry fighting vehicles (IFVs), surface-to-air missiles (SAMs), artillery pieces, ammunition, uniforms and other equipment and supplies – the Soviets found the MPLA not keen to grant them any kind of permanent military bases in the country. Indeed, by 1978, they often found themselves irked by the statements and deeds of important functionaries in Luanda. They never gave up trying though, and when nothing else worked, at least took care to lobby the SMMA into a dominant position at the military level. The Soviet-Angolan military partnership then went through several

Table 1: Soviet Chief Military Advisors to Angola, 1976–1989

Period	Rank	Name
1976–1978	Major-General	Ilya Ponomarenko
1978–1980	Major-General	Vassily Shagnovich
1980–1982	Major-General	Georgy Petrovsky
1982–1985	Lieutenant-General	Konstantin Kurochkin (VDV)
1986–1987	Lieutenant-General	Leonid Kuzmenko (VDV)
1987–1988	Lieutenant-General	Piotr Gusev
1988–1989	Lieutenant-General	Valery Belyaev (VDV)
1990–1991	Major-General	Surodev

phases. During the first, lasting from 1977 until 1983, the Angolans continued relying on Cuban advice at the tactical level, but generally ignored both this and the Soviet advice at strategic level. During the second phase – mainly due to the blows inflicted by UNITA all the way from the border with Zambia via Cangamba to north-western Angola – the MPLA began to appreciate the gravity of its deteriorating security situation. Understanding that the FAPLA was inadequate for both defence against the South African threat and UNITA, Luanda launched a major expansion of both the regular armed forces, its counterinsurgency forces and its militia. With the help of connections and the influence in Moscow of the contemporary Chief of the SMMA (officially titled



Colonel-General Konstantin Kurochkin (centre, with sunglasses), seen here with a group of high-ranking officers of the SMMA and FAPLA, was instrumental in convincing Moscow to start delivering more advanced arms to Angola, thus enabling the massive military build-up of the 1983–1985 period. However, he also introduced the pattern in which top officers of the SMMA imposed themselves in control of the Angolan armed forces. (Albert Grandolini Collection)

the Chief Military Advisor), Colonel-General Konstantin Kurochkin, the MPLA secured accelerated deliveries of constantly increasing numbers of armoured vehicles and artillery, and other arms, ammunition and equipment. This enabled the simultaneous expansion of the FAPLA to more than 70 brigades (most of which were 'light infantry' brigades, BrILs, actually established, equipped, and trained for COIN warfare), but also the placement of greater emphasis on COIN operations by all the involved branches from the regular army to the territorial militias and the railway police. With the principal architect of this expansion and reorganisation being the Chief-of-Staff (and thus commander) of the FAPA/DAA, Colonel Iko Carreira (fresh from completing an advanced course at the Frunze Military Academy in the USSR), the Angolan air force profited from it too and was augmented by deliveries of Mikoyan Gurevich MiG-21bis and MiG-23ML interceptors and fighter-bombers, Mil Mi-8/17 assault and transport helicopters, and Mil Mi-25 helicopter gunships. Understanding the need for better regional command and control, on Soviet advice Carreira completely reshuffled the command structure in 1983 to one based on military regions. By the end of the year, the entire chain of command was also new, starting with Colonel Pedro Maria Tonha 'Pedale' as the new Minister of Defence and Colonel Antonio Franca 'Ndalu' as the new Chief-of-Staff FAPLA. A year later the MPLA went a step further to create the Defence and Security Council (CSD), the primary task of which was to better manage operations against UNITA and the South Africans through coordinated work of the civilian administration and military authorities. By the time this reform was completed, in 1985, Kurochkin was back in Moscow. Nevertheless, he personally selected his replacement Lieutenant-General Leonid Kuzmenko. Like Kurochkin, Kuzmenko was an officer of the Soviet airborne troops (VDV): however, he proved even more aggressive than his predecessor and quickly imposed himself in overall command of the Angolan armed forces, while further side lining the Cubans. Henceforth, all the major FAPLA operations were planned by the staff of the SMMA: although up to 11,000 Soviet officers and other ranks were rotated through the SMMA over the 15 years of its existence, and there were never more than about 500 of them in Angola at the same time, during 1985-1989 they were exercising influence entirely disproportional to their combat experience and numbers.

Frustrated Internationalist Volunteers: MMCA

With hindsight, the principal aim of the Cuban military intervention in Angola can be described as 'based on naïve leftist ideology'. Driven by the idea of anti-imperialist struggle, the



Starting from Fidel Castro via all the generals down to senior colonels of the FAR, all the Cuban military officers were highly experienced in counterinsurgency warfare. From left to right: General Arnaldo Ochoa (top Cuban military strategist of the 1975-1988 period), General Senen Casas, Fidel Castro, General Rafael del Pino and (Chilean) General Anaya Castro. (via Luis Dominguez)

Military Academy in the USSR), the Angolan air force profited from it too and was augmented by deliveries of Mikoyan Gurevich MiG-21bis and MiG-23ML interceptors and fighter-bombers, Mil Mi-8/17 assault and transport helicopters, and Mil Mi-25 helicopter gunships. Understanding the need for better regional command and control, on Soviet advice Carreira completely reshuffled the command structure in 1983 to one based on military regions. By the end of the year, the entire chain of command was also new, starting with Colonel Pedro Maria Tonha 'Pedale' as the new Minister of Defence and Colonel Antonio Franca 'Ndalu' as the new Chief-of-Staff FAPLA. A year later the MPLA went a step further to create the Defence and Security Council (CSD), the primary task of which was to better manage operations against UNITA and the South Africans through coordinated work of the civilian administration and military authorities. By the time this reform was completed, in 1985, Kurochkin was back in Moscow. Nevertheless, he personally selected his replacement Lieutenant-General Leonid Kuzmenko. Like Kurochkin, Kuzmenko was an officer of the Soviet airborne troops (VDV): however, he proved even more aggressive than his predecessor and quickly imposed himself in overall command of the Angolan armed forces, while further side lining the Cubans. Henceforth, all the major FAPLA operations were planned by the staff of the SMMA: although up to 11,000 Soviet officers and other ranks were rotated through the SMMA over the 15 years of its existence, and there were never more than about 500 of them in Angola at the same time, during 1985-1989 they were exercising influence entirely disproportional to their combat experience and numbers.

Cubans considered it to be their 'internationalist' task to help safeguard the survival of the MPLA government as an anti-imperialist and socialist movement, and thus the build-up of Angola as a 'progressive', socialist nation. Much to their dismay, led by President José Eduardo dos Santos, the Angolan leadership that established itself in power following the death of the MPLA's original leader, António Agostinho Neto in 1979, was showing a remarkable resistance to advice: for most of the following four years, it not only ignored the growing threat of UNITA, but provoked ever more South African externals through open support for SWAPO. Unsurprisingly, the Cubans withdrew from COIN operations and the sole reason they remained in the country were regular South African military interventions and growing support for UNITA: from the point of view of the Cuban leader Fidel Castro, any kind of 'victory' in the interest of the 'Apartheid regime' in Pretoria was completely unacceptable. Much to their frustration, the situation changed very little even after the series of painful failures in 1983-1984 – when, instead of following (perfectly logical, and definitely pragmatic) Cuban advice on how to run the COIN effort – the leaders of the MPLA and the FAPLA went to another extreme and left the Soviets to assume the overall command over their war-fighting effort.

Nominally at least, all the Cuban military activities in Angola were under the overall command of the MMCA: this included not only the military advisors assigned to the FAPLA, the FAPA/DAA, and the tiny People's Navy of Angola (Marinha de Guerra Popular de Angola, MGPA), usually deployed in groups of about 50-100 at brigade level, but also complete units of the FAR. Reality was significantly different. In reality, by 1983-1987 the MMCA became primarily responsible for training and advising FAPLA at the tactical level and then foremost in regards of COIN warfare. Furthermore, it exercised direct control over only three manoeuvring units of the FAR, all of which were specialised,

supply-convoy-protecting assets: so-called *caravanas venceremos*, responsible for protecting convoys hauling fuel, food and ammunition for regular FAR units. In turn, since 1982, the latter had been organised into two intermediate-level commands that, for all practical purposes, were receiving their orders directly from Havana. The bodies in question were named the Northern Group of Forces (Agrupación de Tropas del Norte, ATN; responsible for facing Zaire), and the Southern Group of Forces (Agrupación de Tropas del Sur, ATS). Their areas of responsibility were separated by the 13th Parallel. The ATN was the smaller of the two: by 1985, it was about 10,000 strong and controlled two tank brigades (including the 20th in Luanda, and the 30th in Malanje), two motorised infantry regiments (Cabinda and Luanda), and three independent task forces (Saurimo, Quibala and Pointe Noire; the later in the Republic of the Congo/Congo-Brazzaville). Facing the South African threat was the – at about 23,000 troops – much more powerful ATS, which included one tank brigade (headquartered in Caala) and five motorised infantry regiments (Namibe, Lubango, Matala, Jamba and Menongue).

Strategic Controversy

Ironically, South African externals into southern Angola supported the theories of the SMMA's officers, according to which the primary threat to Angolan security was that of a conventional invasion from abroad. That way of thinking was perfectly in line with what all the Soviet officers had been taught during their professional education. Defined by the General Staff of the Soviet Armed Forces (GenStab or GenShtab), and entirely based on experiences from the Second World War, this was preparing the Soviets for an all-out war against the forces of the North Atlantic Treaty Organisation (NATO) in Central Europe. In the way the GenStab of the 1970s and the 1980s thought, this doctrine was applicable to all the other conflicts, and there was no place for 'unimportant experiences' from 'some minor, semi-conventional wars fought in forgotten corners of the world'. Correspondingly, while lacking their own, first-hand combat experience, the Soviets rarely studied any other conflicts since 1945, except for the Vietnam War of 1960-1975, and even then usually in not a particularly serious fashion. Following the same way of thinking,

Table 2: FAPLA, FAPA/DAA, DAA/FAR and FAR Terminology

Abbreviation	Native Name	Translation & Notes
BAT	<i>Brigada de Artilharia Terrestre</i>	Ground Artillery Brigade
BDAA	<i>Brigada de Defesa Anti-Aérea</i>	Anti-Aircraft Brigade
BFAA	<i>Brigada de Foguete Anti-aérea</i>	Anti-Aircraft Rocket Brigade
BrDA	<i>Brigada de Desembarque e Assalto</i>	Disembarking and Assault (airborne) Brigade (FAPLA)
BrFE	<i>Brigada de Forças Especiais</i>	'Special Purpose' or Special Forces Brigade, equivalent to Soviet Spetsnaz
Brl	<i>Brigada de Infantaria</i>	Infantry Brigade (FAPLA)
BrlM	<i>Brigada de Infantaria Motorizada</i>	Motorised Infantry Brigade (FAPLA)
BrlN	<i>Brigada de Intervenção</i>	Intervention Brigade (FAPLA)
BrlL	<i>Brigada de Infantaria Ligeira</i>	Light Infantry Brigade (FAPLA)
BT	<i>Brigada de Tanques</i>	Tank Brigade (FAR)
CIR	<i>Centro de Instrução Revolucionária</i>	Revolutionary Training Centre (MMCA/FAPLA)
CORL	<i>Companhia Rádio Localização</i>	Radio-Location Company (FAPA/DAA)
DEEM	<i>Direcção de Estabelecimentos de Ensino Militares</i>	Military Education Establishment (FAPLA)
ENAL	<i>Escola Nacional de Aviação Ligeira</i>	National Light Aviation School (FAPA/DAA)
ENAM	<i>Escola Nacional de Aviação Militar</i>	National Military Aviation School (FAPA/DAA)
GAAA	<i>Grupo de Artiharia Anti-Aerea</i>	Anti-Aircraft Group (FAPA/DAA)
GT	<i>Grupo Táctico</i>	Tactical Group (primary COIN unit of the FAPLA until 1978; subsequently a battalion-sized task force of every Cuban brigade or regiment in Angola)
LCB	<i>Lucha contra Bandidos</i>	Official FAR term for COIN
ODP	<i>Organização de Defesa Popular</i>	People's Defence Organisation; MPLA/FAPLA-controlled militia
RAC	<i>Regimento de Aviação de Caça</i>	Fighter Aviation Regiment (FAPA/DAA)
RACB	<i>Regimento Aviação de Caça-Bombardeiro</i>	Fighter-Bomber Aviation Regiment (FAPA/DAA)
RA/DAAN	<i>Região Aérea e Defesa Anti-Aérea Norte</i>	Northern Air Defence Region (FAPA/DAA)
RA/DAAS	<i>Região Aérea e Defesa Anti-Aérea Sul</i>	Southern Air Defence Region (FAPA/DAA)
RAH	<i>Regimento Aéreo de Helicóptero</i>	Helicopter Aviation Regiment (FAPA/DAA)
RATM	<i>Regimento Aéreo de Transporte Misto</i>	Mixed Transport Aviation Regiment (FAPA/DAA)
RIM	<i>Regimento de Infataria Motorizada</i>	Motorised Infantry Regiment (FAR)
RLCBM	<i>Regiment de Lucha Contra Bandas Mercenarias</i>	Regiment for Combat Against Mercenary Bands (FAR)
RTRT	<i>Regimento de Tropas Rádio Tecnicas</i>	Regiment of Radio-Technical Troops (FAPA/DAA)

for example, air power served the purpose of ‘extended-range artillery’, and was not considered an element capable of winning decisive victories.

Certainly enough, early during their involvement in Angola, the Cubans very much shared the MPLA and FAPLA’s threat perceptions. This was the very reason for their deployment of entire regular units of the FAR in the country. However, by 1978 they were quick to realise that the insurgency was on the path to growing into a much more potent threat. Considering they were fresh from fighting an extensive counterinsurgency campaign at home in the 1960s, and then supervising the establishment and build-up of nearly a dozen native armed forces around Africa and the Middle East in the early 1970s, the conclusion is unavoidable that the Cubans did know better than either the Angolans or the Soviets. Moreover, their chain of command was much shorter than that of the Soviets, and thus field experience had an almost direct impact upon decisions of the government in Havana. Correspondingly, the Cubans not only put to use a host of recent combat experiences from conflicts at least roughly similar to that in Angola but began emphasising quality and flexibility over quantity in training and organisation of their armed forces. They placed great emphasis upon the training of their junior officers, and understood air power as a factor crucial for ground operations. In Angola during the 1980s, they quickly understood that UNITA/FALA was the primary threat, and that a dedicated and patiently conducted COIN campaign would be necessary to bring it under control, and then, gradually defeat the insurgency.

Unsurprisingly, and while demonstrating to the outside the pretence of a cordial friendship and an unbreakable alliance, as well as experiencing numerous differences of ideological nature, members of the SMMA and the MMCA were almost constantly at odds with each other. Nowhere were their differences as big as in regards of what the MPLA and the FAPLA should consider their priority threat – South Africa or UNITA – or what strategy should be applied to counter the insurgent threat. Certainly enough, the blows of 1983 eventually forced the dos Santos administration into re-focusing on defeating UNITA; and, certainly enough, Kurochkin’s connections and influence in Moscow then helped bolster the FAPLA and the FAPA/DAA with large amounts of more advanced weaponry, that – together with Carreira’s reforms – enabled the rapid expansion of the Angolan armed forces in 1983-1985. However, while the Cubans remained on the cautious side, the South African withdrawal from Angola in the wake of the Lusaka Accord of 7 September 1974, convinced both the MPLA/FAPLA and the SMMA to believe the illusion that the time had come to deliver the one, final blow upon the insurgency. This is what led to the series of big battles fought in south-eastern Angola in the 1985-1989 period.

Angolan and Cuban Military Terminology

Before discussing details of the doctrine and tactics of the FAR of Cuba, and the FAPLA and the FAPA/DAA of Angola in 1985-1987, it is important to understand that both of these armed forces used (and still use) their own military terminology, in Spanish and Portuguese, respectively. Both terminologies were dominated by a large number of abbreviations of unit designations. Because in the @War series we always strive to use the local military terminology, and for the reader’s easier orientation, Table 2 lists the most important details.

Cuban Tactical Deployment of 1985

All the arms, equipment and supplies – indeed, even the pay for every officer, non-commissioned officer (NCO), and other ranks – of the FAR deployed in Angola were provided for by the government in Luanda. In other words: Luanda paid for every bullet, shovel, vehicle, tank, artillery piece, every uniform and every food ration, every litre of fuel or water, and every aircraft or helicopter operated by the MMCA, the ground forces of the FAR, and the DAA/FAR’s contingent.²

On average, a FAR brigade deployed in Angola during the mid-1980s – whether as an element of the ATN or the ATS – had a strength varying from 2,500 to 3,800 troops, organised into three or four battalions: a tank brigade had three tank battalions and one motorised infantry battalion, with a total of 70 T-54/55 main battle tanks (MBTs) and 50 other armoured vehicles, while a motorised infantry brigade had three infantry battalions and one tank battalion of 22 MBTs. These core elements were reinforced by between 18 and 24 artillery pieces, usually organised into a field artillery group (with two or three artillery batteries – each with six 122mm D-30s – a group of 12 BM-21s, and a battery of 130mm M-46 guns) and an anti-aircraft group (usually a battery each of ZSU-23-4 Shilkas and Strela-10 [ASCC/NATO-codename ‘SA-13 Gopher’] surface-to-air missile systems [SAMs]). Through 1984-1985, FAR brigades in Angola were partially re-equipped with T-62M MBTs, while their older T-54/55s were handed over to motorised infantry regiments, four of which were expanded into full tank brigades. In turn, and with the exception of the two FAR battalions deployed in the Cabinda Enclave, all the antique T-34/85 medium tanks and SU-100 assault guns were withdrawn from frontline service and dispersed to strengthen numerous



Cuban personnel of one of about 25 ‘radio-technical companies’ worked up through 1985-1987. (via Albert Grandolini)



A Soviet An-12B transport (serial CCCP-11922) unloading one of the first P-12 radars to reach Angola, in 1982. (via Albert Grandolini)

mixed FAPLA/FAR detachments guarding crucial installations: for all practical purposes, most of them ended their service career as 'pillboxes'.

That said, and despite Kurochkin's influence in Moscow, there were clear limits to the Soviet largesse. Thus, the mass of new weapon systems delivered to Angola in 1983-1985 were of the designs from the 1960s. As such, they were a far cry from the armament operated by crack Soviet units in Central Europe and barely matched whatever the SADF fielded: indeed, neither the Cubans nor Angolans got T-72 MBTs, while a number of motorised infantry battalions of the FAR in Angola were re-equipped with the entirely inadequate BMD-1 airborne infantry

fighting vehicles, instead of more suitable BMP-1 or BMP-2 infantry fighting vehicles (IFVs).

Regardless of how equipped, the mass of the ATS was deployed in the so-called 'Fidel Castro Line': a line of fortifications roughly stretching over 500 kilometres (310 miles) from Namibe on the Atlantic coast to Menongue in southern central Angola. Here it is important to observe that this was anything but one solid and uninterrupted row of trenches. On the contrary: the FAR units were positioned to defend crucial communication links, or to act as reserves behind major FAPLA units. Correspondingly, their networks of entrenchments, underground shelters and other fortifications were dense only in several relatively limited areas, and there were none for dozens of kilometres in between.



Continuing his practice of acquiring Western-made aircraft and helicopters, in early 1985 Colonel Carreira placed an order for 12 Spanish-made CASA C.212 light transports in Madrid. A group of 25 pilots and ground personnel underwent conversion training for them in Sevilla, starting in July 1985, and the first eight aircraft (serials T-400 to T-407) were in Angola by the end of the same year. (Albert Grandolini Collection)



An FAPA/DAA PC-7, seen while being towed down the tarmac of Luanda International, against the backdrop of two An-26s. The type was the first aircraft of Western origin to serve in Angola with built-in capability to deploy weapons – gun-pods or pods for unguided rockets. The squadron flying them was originally assigned to what eventually became the 26th RACB but by 1985 redeployed to Luanda and was assigned to the 7th RATM. (Albert Grandolini Collection)

Moreover, not one of the FAR brigades assigned to the ATS was concentrated in one location. On the contrary, they were always divided into at least two tactical groups (Grupo Táctico, GT). The GTs were combined-arms formations of between 800 and 1,000 troops designed to operate independently, mostly centred on one infantry battalion reinforced by a tank company, or a tank battalion combined with an infantry company. Each of the GTs was further supported by at least a battery of howitzers and BM-21s each. Very similar to the task forces or combat groups of the SADF, the GT-system was quite flexible and meant to enable brigade commanders to organise their units for specific missions.

However, and while certainly of advantage considering the local circumstances, the ultimate reason for the FAR units in Angola being dispersed this way – and their commanders going to lengths to avoid building-up large troop concentrations until the very end of their involvement – could be described as ‘rather indirect’ by nature. Harry Villegas, who served two tours of duty with the MMCA, explained:

Our high command was aware of the South Africans possessing nuclear weapons that could be deployed in the theatre of operations... (correspondingly) in Angola, our forces were organised into tactical groups of no more than a thousand troops. There were no larger troop concentrations to prevent their devastation by a single blow.

DAA/FAR contingent

While the FAR troops deployed in Angola after 1976 hardly ever saw a single engagement with the South Africans, or – if involved in combat operations – were busy fighting the insurgency in central and northern parts of the country, something entirely different was true for the contingent of the Cuban air force deployed in the country. The 10 MiG-17Fs, one MiG-15UTI, 12 MiG-21MFs, and two MiG-21UMs delivered by the USSR to Angola in late 1975 and early 1976 represented the only fighter jet component of the FAPA/DAA for the next six years.³ With there being no native



The remaining four C.212s from the Angolan order followed in 1986. This example was photographed during testing prior to delivery. The type was well-appreciated by Angolan crews for its reliability and robustness. (Albert Grandolini Collection)

Table 3: FAPA/DAA, ORBAT, 1985-1987¹⁶

Element	HQ	Equipment
FAPA/DAA	HQ Luanda	Chief-of-Staff Colonel Henrique Teles Carreira 'Iko'
DAA	HQ Luanda	CO Major Jóse Manuel de Almeida Taviro
RA/DAAN	HQ Luanda	CO Major Altino Carlos dos Santos; responsible for provinces Bengo, Benguela, Cabinda, Cuanzo North, Cuanza South, Luanda, Lunda North, Lunda South, Malanje, Uige and Zaire
20th RTRT		
	Cabinda	GCI company and 1 P-12, 1 PRV-16, 1 P-19, 1 P-37
	Soyo	1 P-18, 1 P-19
	M'banza Congo	1 P-18, 1 P-19
	Luanda	GCI company and 1 P-12, 1 PRV-13, 1 P-18, 1 P-19, 1 P-37
	Negage	1 P-12, 1 PRV-16, 1 P-19
	Luena	GCI company and 1 P-18, 1 P-19, 1 P-37
	Lucusse	from 1986: 1 P-18, 1 P-19, 1 P-37, 1 PRV-16
	Saurimo	GCI company and 1 PRV-16, 1 P-18, 1 P-19
	Cafunfo	1 P-18, 1 P-19
	Dundo	1 P-18, 1 P-19
7th RATM	Luanda IAP	controlled by the SMMA; An-2, An-12, An-26, F.27; Mi-8/17, Mi-25/35, Alouette III, SA.341, SA.365F, PC-7/9, FR.172, BN-2, C.212
17 RAH	Huambo AB	CO Captain José Catumbela; 8 Mi-8, 6 Mi-17, 4 Mi-25, 9 Mi-35, 28 Alouette III
164th EIH	Soyo AB	est. 30 Jul 1988
174th BDAA	Lobito AB	3 SA-3 SAM-sites, technical group and radar company
175th BDAA	Luanda	mixed brigade with 2 SA-2 and 2 SA-3 SAM-sites, and one mixed technical group
176th BDAA	Cabinda	mixed brigade with 3 SA-3 SAM-sites and one radar company
181st GAA	Negage	mixed anti-aircraft artillery group
190th BDAA	Soyo	mixed brigade with 1 SA-2, 2 SA-3 SAM-sites, one radar company, one battery of 37mm AAA
197th BDAA	Luanda IAP	
188 ENAM	Negage AB	Cessna FR-172K, IAR.823
189 ENAL	Lobito AB	IAR.316B/SE.316B
RA/DAAS	HQ Lubango	CO Major Hélder Vieira Dias Júnior
230th RTRT	Lubango	Lubango seems to have received official designation 'Air Base No. 5'
	Cristo Rei	GCI company
	Matala	GCI company and 1 PRV-11, 1 P-12, 1 P-15
	Jamba	1 PRV-11, 1 P-12, 1 P-15
	Mulando	1 PRV-11, 1 P-18
	Cahama	GCI company and 1 PRV-11, 1 P-12, 1 P-15
	Chipa	Chipa: 1 PRV-13, 1 P-18, 1 P-19
	Xangongo	GCI company and 1 PRV-13, 1 P-18, 1 P-19
	Mucope	GCI company and 1 PRV-16, 1 P-18, 1 P-19
	Umbe	1 P-19
	Chibemba	1 PRV-16, 1 P-18, 1 P-19
1st RTRT		
	Namibe	GCI company and PRV-11, 1 P-18, 1 P-19, 1 P-37
	Caraculo	2 P-15
	Virel	1 P-18, 1 P-19
	Tombua	2 P-15 (replaced by 2 P-19 by 1987)
	Vila do Tombua	1 P-18, 1 P-19
	Menongue	GCI company and 1 PRV-13, 1 P-12, 1 P-15, 1 P-37

National Markings and Serial Numbers

One might expect that, because all of the above-mentioned aircraft and helicopters and other equipment were paid for by Angola, and – at least officially – all operated by the FAPA/DAA, they would have worn the same national markings and other insignia; and because they were all of Soviet origin, they would also all wear the same, or similar camouflage colours. In reality, and despite efforts to introduce and maintain standards, this was never the case. Quite on the contrary: the national markings applied on Angolan military aircraft underwent a period of improvisation and then at least one transformation between 1975 and 1987, and while a very clear and logical system of serial numbers was introduced on combat aircraft and most helicopters, the application of these was often different, and sometimes actually indicative of their true users – Angolans or Cubans.

Often said to have been influenced by the ‘Marxist ideas of the ruling MPLA government’, Angola’s national flag introduced on independence actually consisted of a bright red field (symbolising the bloodshed during the years of colonial oppression and the national struggle for independence), and a black field (for the African continent). This was decorated by a cog wheel (representing workers and industrial production), a machete (symbolising work and the armed struggle), and a star (symbolising national solidarity and progress) – all of which were applied in yellow. During the 1970s, fin flashes of different size and form were applied on Angolan aircraft: these consisted of small red and black flags on transport aircraft, while lighter aircraft often had the top of the fin or the top of the rudder painted in the same colours. Other insignia was applied rarely, or only in the form of a single yellow star. Later on, some of the lighter types – like PC-7s, for example – also received a tricolour in red, yellow and black.

Cuban-operated MiGs and Mil helicopters had their entire rudder painted in Angolan national colours, with red at the top, yellow in the centre and black at the bottom. A roundel consisting of a small black centre with a yellow star, surrounded by a larger red circle, was applied at least on the lower wing surfaces of MiG-21s, top and bottom wing surfaces of MiG-17s, and the rear fuselage of Mi-8s from 1976 well into the 1980s. The DAA/FAR contingent retained this practice when re-equipped with MiG-21bis in 1983.

The Angolans retained the Cuban-applied national markings when taking over older MiG-17s, and then MiG-21MFs, MiG-21PFMs and MiG-21UMs. Meanwhile, between 1979 and 1983 they also introduced an entirely new – and very original – national insignia instead: this consisted of a roundel in red and black, split by a horizontal wavy line, and bearing a yellow star. While certainly applied on the fins of all the Angolan-operated MiG-21bis, its possible application on top or bottom wing surfaces remains unconfirmed.

Something similar was also the case for the application of serial numbers. Originally, lighter types in the 1975-1976 period wore a miscellany of serials, which lacked any order. Upon the official establishment of the FAPA/DAA in January 1976 a relatively simple system based on the aircraft’s purpose was introduced, always including a prefix and two – later three – digits as described in Table 4. Except in the case of PC-7s, all the national markings and serials were applied only once the aircraft had reached Angola and were officially accepted into service with the air force: this is why there are a number of photographs showing large numbers of – for example – MiG-21s and MiG-23s parked at Luanda International wearing no national markings or other insignia. On combat aircraft, serials were always applied in the same red as used in the national markings, on all other aircraft in black, and on Mi-8s and Mi-17s in white, yellow or – later on – in black. Where there was a difference in the application of serials on combat aircraft, it was their fonts – which depended on the nationality of their users. Cuban-operated MiG-17s, MiG-21MFs, MiG-21PFMs and the first batches of MiG-21bis all received serials applied in oval letters and digits, for example: those on Angolan-operated MiG-21s were quadratic with corners cut at around 45 degrees. A fleet-wide standardisation in this matter was introduced only with the service entry of MiG-23s, but even then, it is now known that the first 12 of these – serials C401 to C412 – were originally (i.e. as of 1985-1987) operated by the Cubans; the second batch of 12 (C413 upwards) by Angolans, and the third (C440 upwards) by the Cubans. That said, at least one Cuban-staffed MiG-23ML unit is known to have swapped several of its mounts with the first Angolan MiG-23 squadron.

Table 4: Prefixes of the Serialling System, FAPA/DAA

Prefix	Meaning
B	<i>Bombardeiro</i> = bomber (applied on Su-25s only, starting in 1989)
C	<i>Caça</i> = fighter or fighter-bomber (MiG-21, MiG-23, Su-22, Su-22M-4)
H	<i>Helicóptero</i> = helicopter (SE.316, Mi-8, Mi-17, Mi-25)
I	<i>Instrução</i> = instruction or training (L-39, MiG-21UM, MiG-23UB, Su-22UM-3K)
R	<i>Reconhecimento</i> = reconnaissance (An-2, PC-7, EMB.312)
T	<i>Transporte</i> = transport (An-12, An-26)

Table 3: FAPA/DAA, ORBAT, 1985-1987¹⁶ (continued)

Element	HQ	Equipment
	Longa	1 P-18, 1 P-19
	Caiundo	1 P-18, 1 P-19
	Cuito Cuanavale	1 PRV-16, 1 P-19, 1 P-37
	Cuito Bié	1 PRV-16, 1 P-18
9th RAC	Lubango	40 MiG-21MF/PFM/bis/UM, 12 MiG-23UB/ML
18rd RAAA	Lubango	anti-aircraft artillery regiment
24th BDAA	Menongue	1 SA-2, 2 SA-3 SAM-sites; redeployed to Cuito Cuanavale, 10 May 1987
26th RACB	Catumbela, Yuri Gagarin/Namibe AB	CO Captain Abel Almeida de Oliveira Livramento; 4 Su-22M, 1 Su-22UM, 7 MiG-21UM, 2 MiG-21U
40th BDAA	Lubango	1 SA-2, 3 SA-3 SAM-sites
192nd RAAA	Cahama/Cuito Cuanavale	anti-aircraft artillery regiment
193th BDAA	Menongue	
194th RAAA	Yuri Gagarin/Namibe AB	
213th BDAA	Matala	
214th BDAA	Namibe	SA-2, SA-3, MANPADs, anti-aircraft guns

personnel qualified to maintain and fly fast jets for the next five years, throughout this period all of the MiGs were exclusively operated by Cuban personnel. The Cubans handed over MiG-17Fs to the Angolans in 1979, but the process of working up the first jet fighter unit remained incomplete even two years later. By then, the DAA/FAR had a specialised COIN-asset deployed in the country equipped with five old MiG-21PFMs (all second-hand Soviet air force aircraft, overhauled prior to delivery and paid for by Luanda), six surviving MiG-21MFs and two MiG-21UMs. In response to an urgent request for delivery of additional jets, Moscow increased the number of MiG-21PFMs to about 20 by the end of 1982. By that time, the Angolans and Cubans had begun working up the first jet fighter unit of the FAPA/DAA, but this process advanced very slowly until 1983, when Luanda was granted permission to place an order for 62 brand new MiG-21bis.⁴

The delivery of the first 30 MiG-21bis in 1983 enabled the Cubans to hand over the two surviving MiG-21MFs, about 20 MiG-21PFMs and most of the MiG-21UMs to the Angolans, while re-equipping two of their squadrons with the new variant. This process was not even completed when – in response to Fidel Castro's demands for Mach 2.3-capable MiG-25s – Moscow agreed to sell 48 MiG-23MLs to Angola, and then rapidly delivered the first batch of 12 of these in May 1984. By mid-1985, the DAA/FAR deployed enough of its own pilots and ground personnel to Angola – and the Soviets delivered enough additional MiG-23ML fighter-bombers and MiG-23UB two-seat conversion trainers – to enable the creation of two Cuban-staffed squadrons of 12 MiG-23s each, while the third unit was still flying MiG-21bis. Cuban veterans do not recall any unit designations being used at all, but according to unconfirmed unofficial reports, the FAPA/DAA used the designation 25th Fighter-Bomber Regiment (Regimento de Aviação de Caça-Bombardeiro, RACB) for administrative purposes.⁵

As of 1985, the home-base for all Cuban-operated MiGs in Angola was Lubango AB but their units frequently operated detachments from other air bases as and when necessary. Although most of the emerging fighter-bomber units of the FAPA/DAA were

also based in Lubango, the Soviets took care to limit interaction between the Angolan and Cuban fast jet units to occasional swaps of aircraft. The situation was significantly different in regards of the Cuban helicopter units. As described in earlier volumes, the Cubans originally brought four of their Mi-8T assault and transport helicopters to Angola in 1976. In March of the same year these were reinforced with four additional examples purchased by Angola but still operated only by the Cubans. Starting in 1979, Angola then acquired additional Mi-8s – for an eventual total of 28. While native crews became more numerous in 1980-1981, the Cubans maintained the presence of their helicopter-personnel at the same levels, so that the additional machines were eventually all flown by Angolans (exceptions being two Mi-8Ts operated by the SMMA and one Mi-8PP (serial H-14) equipped for VIP-transport, flown by Soviet pilots until 1982). Something similar was true for transport aircraft; out of the first 12 An-26s, for



Another little-known acquisition of Angola in 1985 was a batch of SA.365 Dauphin helicopters. Other than that they were assigned to the EHL, next to nothing is known about their operations. (via Albert Grandolini)



Another Western-manufactured type acquired by Carreira was the French-made SA.342 Gazelle helicopter. Armed with a single 20mm GIAT M-621 automatic cannon (always installed on the right side), this type was primarily deployed for COIN purposes, usually in conjunction with Angolan special forces. (via Albert Grandolini)

example, six were operated by Angolan crews, five by Cubans and one by the Soviets.

Integrated Air Defence System

Contrary to earlier times, when junior MiG-21 pilots of the DAA/FAR would often be rushed into combat with no or next to no tactical training and experience in the deployment of armament, Cuban pilots and ground personnel deployed to Angola in 1985-1987 were far better trained and prepared for the mission than ever before. For all practical purposes, their best pilots matched the best of the SAAF. Their sole problem remained the deficiencies in their equipment – especially navigational platforms of their aircraft and helicopters, the effective deployment of which required comprehensive support from the ground. Precisely this was the area in which the Angolans invested most massively over the previous two years; through 1983-1985, the air defence assets of the FAPA/DAA experienced an amazing expansion and this although the Angolans were unable to provide more than about 30-40 percent of the necessary personnel. The original 1st Regiment of Radio-Technical Troops (RTRT) – the core of early warning radar-troops of Angola – received a large number of additional Soviet-made radars in late 1984 and through 1985, including older PRV-11s and PRV-13s, PRV-16 height finders and P-18s and P-19s. Thus, it was rapidly expanded into two, and then three such regiments (20th RTRT was operational in Luanda by 1987; 230th in Lubango around the same time). The case was similar with air defence brigades (BDAAs), equipped with SAMs: their number was increased from eight to 10, and they were complemented by at least four independent air defence regiments (RAAs), primarily equipped with anti-aircraft artillery. All the units were provided with necessary communication facilities and support elements, the most important of which were new R-842 and R-845 radios (which replaced the old and unreliable R-105 and R-108s), but also PAR-8, PAR-9, and PAR-10 navigation beacons and RSP-7 and RSP-10 landing aids. The unit originally operating such systems, the Independent Company of Aerodrome and Technical Services, was expanded as fast as new personnel could be trained, and soon had detachments deployed at all air bases.⁶

Indeed, through 1985 all the air defence assets were networked into an integrated air defence system (IADS, or RA/DAAA in

Angolan military vocabulary). Centred on two and then three RTRTs, by the late 1986 and early 1987 this was subdivided into the Northern (RA/DAAN) and the Southern branch (RA/DAAS). Certainly enough, for the time being, the efficiency and functionality of the Angolan IADS – even its existence – were possible only thanks to the assignment of over 2,000 Cuban personnel and dozens of Soviet advisors. Moreover, nothing is known about the Angolans acquiring any automated tactical management systems (ATMS) from the USSR, such as Pori or similar. Thus, the exact level of integration of all the

components remains unclear. However, there is little doubt that by 1987 this system was centralised enough to become capable of effectively controlling all aerial movements in Angolan airspace, except those at low and very low altitudes over eastern and south-eastern parts of the country. Indeed, the RA/DAAN and the RA/DAAS became capable of controlling even the movement of civilian aircraft, greatly improving the security of their operations. In order to prevent a repetition of incidents from earlier times, when several airliners and transport aircraft were shot down by friendly units for the lack of positive replies to electronic identification friend or foe (IFF), the crews of these – regardless of whether domestic or foreign – were all advised to fly along pre-determined aerial corridors. Of course, mishaps still did occur occasionally, but these were kept at an absolute minimum.⁷ Foremost, this IADS provided critical services to the fighter-bombers of both the FAPA/DAA and the DAA/FAR, all of which – due to the design-peculiarities of the Soviet-made combat aircraft, described in Volume 3 – could not operate effectively without such support. This reached such proportions that starting from 1985 the headquarters of the RA/DAAN and the RA/DAAS also exercised control over all combat operations of the units equipped with MiG-21s and MiG-23s, regardless of whether Angolan or Cuban.⁸

Uncertain Factor: Angolan Fighter-Bomber Units

As of mid-1985, the centrepiece of the Angolan fighter-bomber operations remained the 9th Fighter Aviation Regiment (Regimento Aéreo de Caça, RAC). Established on 23 July 1984, and headquartered at Lubango AB, this regiment consisted of one operational conversion unit equipped with MiG-21UMs, one flying older MiG-21PFMs, two equipped with MiG-21bis, a flight of two MiG-21Rs, and a flight of Mi-17 helicopters used for search and rescue purposes.⁹

The second jet fighter unit of the Angolan air force was the unit operating survivors of 10 Su-22s and two Su-22UMs delivered in 1983. While still based at Catumbela AB and working up with help of a team of Soviet advisors led by Lieutenant-Colonel Nikolay Adonin, this lost its reconnaissance-strike component equipped with Pilatus PC-7 turboprops well before moving to Yuri Gagarin AB in December 1986, when it was declared operational as the

26th Fighter-Bomber Regiment. However, future elements of this unit did fly combat operations as of 1985, and for reasons of clarity it will be referred to as the 26th RACB throughout this volume.¹⁰

Both the 9th RAC and the 26th RACB were suffering the consequences of not only the Soviet reluctance to train more Angolans as pilots and ground personnel at earlier times, but also the unnecessarily long and poor-quality Soviet pilot-training. Certainly enough, this was designed to train young candidates who had no experience with technology, electronics and mechanics at all, but also produced pilots essentially unqualified to fly combat operations. Moreover, because of this system, the Angolan cadets never flew enough to improve their skills, while both the MiG-21 and the MiG-23 were actually designed for fighting a conventional war in Central Europe rather than hunting insurgents in the African bush. As a consequence, when the Soviets did start delivering enough combat aircraft for an expansion of the FAPA/DAA, the Angolans were rushed through simplified training and then sent to fight a war flying aircraft unfit for the purpose. Consequently, all their units constantly suffered very high attrition rates and required the presence of dozens of Soviet advisors to attain at least a minimal level of operability.

Crucial Factor: Transport Fleet

The centrepiece of the FAPA/DAA's transport assets as of 1985–1987 was the 7th Air Transport Regiment (RATM). Based at Luanda International, this huge regiment was under the direct control of the SMMA and operated not only all the transport-types, including Soviet An-12s and Il-76s on temporary detachment to Angola, but also Angolan-owned An-2s, An-26s, the two Dutch-made Fokker F.27s acquired in the late 1970s, and, starting in late 1985, Spanish-made CASA C.212s.¹¹ The 7th RATM also controlled several squadrons of helicopters equipped with Mi-8/17s, Mi-25/35s, and Alouette IIIIs, and, by 1987, it also controlled two additional squadrons: Esquadra de Reconhecimento e Assalto, equipped with Swiss-made Pilatus PC-7 and PC-9 light strikers, and Esquadra de Transportes e Apoio, equipped with Reims-Cessna FR.172s, Britten Norman BN-2 Islanders and newly-delivered CASA C.212 Aviocars.¹²

Operated on behalf of the Angolan government and the MMCA, was a flight of two Ilyushin Il-62M airliners, purchased in 1986 from the USSR, initially crewed by Cubans and frequenting the route Havana-Luanda (in similar fashion, the national airline TAAG acquired a third Il-62M, registered as D2-TIF: this aircraft

was initially operated by Soviet crews only, until Angolans took over in 1988).¹³

Omnipresent Helicopters

Much closer to the frontline was the 17th RAH, home-based in Huambo. This was the main helicopter asset of the FAPA/DAA, consisting of one squadron equipped with Mi-8Ts, another with survivors of 10 from the first batch of Mi-17s, and – starting from 1984 – the first four Mi-25s (export variant of the famous Soviet Mil Mi-24 helicopter gunship, codenamed ‘Hind’ by the ASCC/NATO). Crewed by some of the most courageous Angolan and Cuban crews, the Mi-25 proved of exceptional value and was heavily involved in several battles of 1985: so much so that the first four examples were all shot down by November of that year. However, by that time eight additional examples were in the country, and thus the squadron flying them remained operational. Nevertheless, the lack of qualified crews reached such proportions that the Cubans were forced to start recruiting pilots of their agricultural aviation to fly Mi-25s in Angola, and where Soviet instructors assigned to the 17th RAH spent more time flying Mi-17s and Mi-25 into combat, than doing their job.¹⁴ Unsurprisingly, the two national military aviation schools of the FAPA/DAA (one in Negage, the other in Lobito; see Volume 3 for details) and Soviet training facilities remained under severe pressure to increase the output of Angolan pilots and ground personnel for combat helicopters for years to come.

Ironically, things were nowhere near as complex or protracted when, in late 1985, Colonel Carreira quickly concluded negotiations for the purchase of two helicopter types from France: the Aérospatiale SA.342 Gazelle and the SA.365 Dauphin. The first group of pilots and ground personnel for these was drawn from the Alouette III squadrons of the FAPA/DAA: they underwent the – now usual – 45-day conversion course in France. All were back in Angola – together with helicopters, all of which were armed with 20mm GIAT M-621 automatic cannons – by early 1986. Interestingly, by this time the second group of nearly 100 former militiamen (30 pilots and 70 technicians) had also concluded its training on Gazelles in Yugoslavia. Organised in the Squadron of Light Helicopters (Esquadra de Helicópteros Ligeiros, EHL), but usually forward deployed in small detachments, they were soon in action against insurgents in northern and central Angola, nearly always in conjunction with FAPLA special forces.¹⁵

2

Operation Second Congress

As described above, and in the previous three volumes of this mini-series, the Cubans and Soviets had been at odds for years over who was the main enemy of the MPLA, and thus how the FAPLA should be built-up, and against whom should it operate as a priority. Even after the experiences of Cangamba, Askari and Sumbe, the Soviets continued advocating the creation of a strong conventional force – to also counter non-conventional threats – while the Cubans continued arguing that the main challenge was not the SADF but UNITA and the FALA. Still, such blows as the loss of Cangamba and the raid on Sumbe had the result of making

the SMMA and the MPLA begin to understand how powerful the insurgency had become. Ironically, this led to them reconciliating their views with those of the Cubans and declaring UNITA as the main enemy: contrary to what could have been expected, this conclusion caused a new bout of controversies between the SMMA and the MMCA.

Strategic Controversy ... again

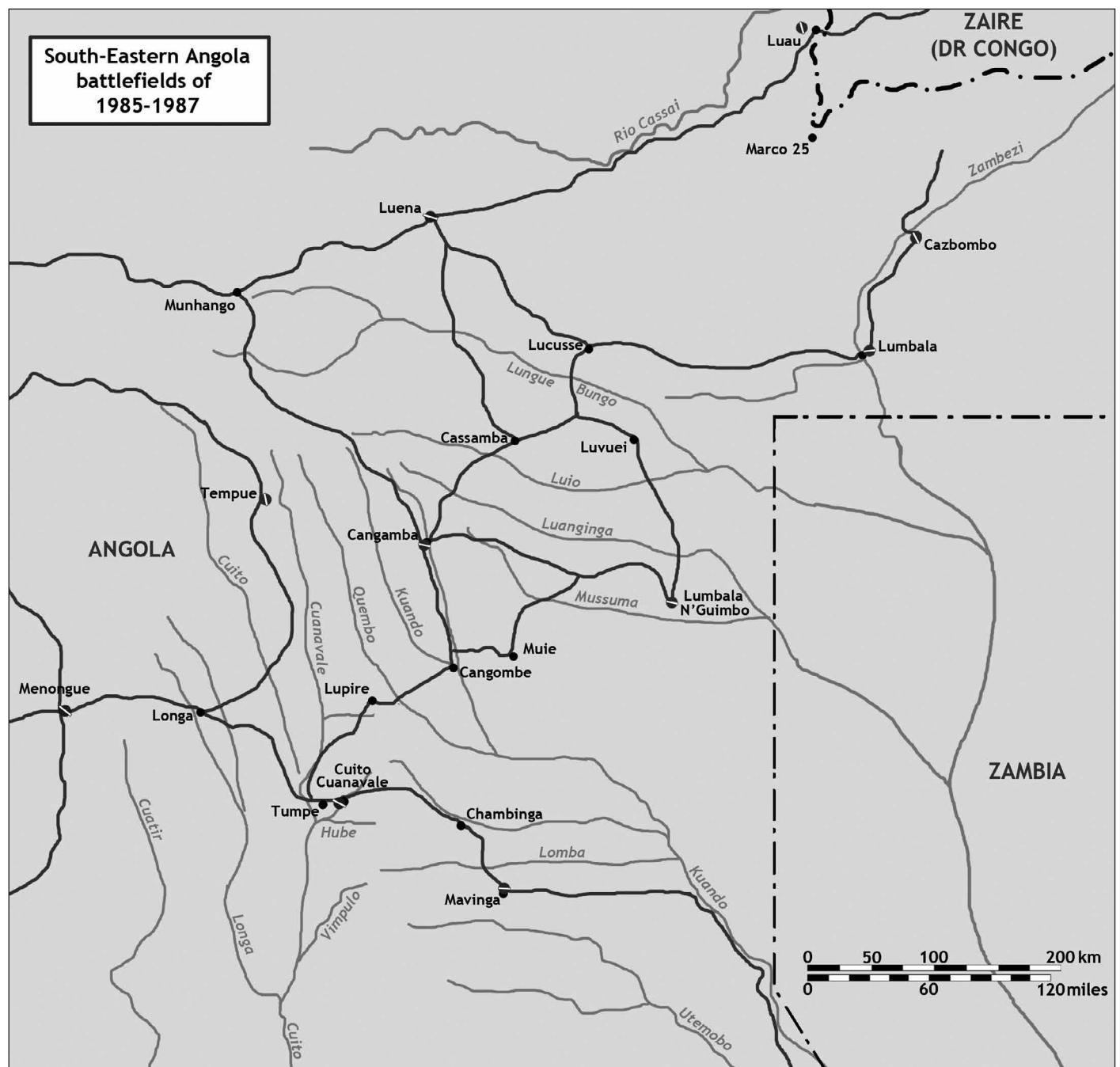
While finally finding an agreement regarding UNITA, the Soviets and Cubans were almost instantly at odds as to how to tackle

this threat. As early as late 1983, officers of the SMMA began advocating a large-scale, conventional offensive on Mavinga. Lieutenant-General Kurochkin argued that once secured, the place and its airstrip were to serve as a springboard for an all-out attack on the main insurgent base (and another airstrip) in Jamba. To the Soviets, it was logical that such a blow would 'decapitate the snake's head' – by securing UNITA's 'bush capital'. Once there, the Angolans were to set up a radar station that would close the crucial gap in the radar coverage over south-eastern Angola and thus make it possible for the FAPA/DAA to interdict South African transports hauling supplies for the insurgency.

Certainly enough, such argument found many sympathetic ears among the Angolan decision-makers, even if for entirely different reasons. Colonel Antonio Franca 'Ndalu', Chief-of-Staff FAPLA, explained:



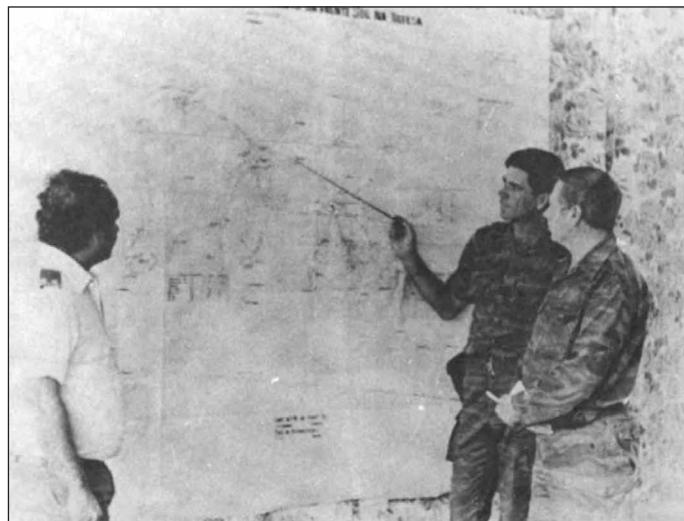
One of countless meetings of Angolan and Cuban officers in the mid-1980s. Many of these ended in deep disagreement, and with the Cubans eventually side-lined from the planning of major operations. (MPLA via Albert Grandolini)



A map of the battlefields of south-eastern Angola of 1985-1987. Operation Second Congress aimed to secure Cazombo and Lumbala in the east (in the so-called 'Cazombo salient'), and at least Mavinga in the south. (Map by Tom Cooper)



The crew of a Soviet Il-76MD transport in front of their mount in Lubango. Notably, although operated for military purposes, the aircraft retained its Aeroflot livery. (via Albert Grandolini)



Two officers of the SMMA seen discussing the situation in Angola with a visiting journalist. (MPLA via Albert Grandolini)

For us, the operation against Mavinga was a question of national honour. How could we allow this man [Jonas Savimbi; authors' note] to remain there? Looking at it dispassionately, and with hindsight, we did not have the means to carry it out, but it was a question of national honour. We had to occupy this territory!¹

After all the frustrations they had experienced with their allies over nearly a decade, high-ranking Cuban officers were wary of such adventures to the point where they not only could never agree with them, but began deriding the Soviet mindset of insistence on conventional warfare. While commenting about the offensive on Mussende from 1983, Harry Villegas observed:

The Soviet advisors in Angola described the plan to retake this town as if they were Marshal Zhukov presenting the offensive against Berlin to Stalin, in 1945. But, the struggle against UNITA required irregular warfare, with light units. Our approach was to defeat the enemy through an accumulation of small victories, not through an "Ayacucho".²

It is unlikely that anything of this had changed by 1985, especially not when the officers of the MMCA insisted on letting UNITA 'rule' over the 'useless', barely populated and economically uninteresting south-eastern corner of Angola, and demanded that FAPLA instead concentrate on combating the insurgents in the centre of the country with a 'classic counterinsurgency campaign'. Their principles were nicely summarised by Jorge Risquet Valdés, Fidel Castro's principal advisor for Angola:

One brigade in one small operation, another in another. That is, we need to draw a grid in an area, assigning

to each brigade a zone for which it will be responsible. Each brigade should engage in a month-long operation, then rest for ten days and receive supplies. It should carry out intelligence work to locate the enemy, and based on that information it should launch a new operation.³

Furthermore, the Cuban commanders assessed an offensive from Cuito Cuanavale to Mavinga as fraught with difficulties. A large force would have to be supplied along just one very long road. Certainly enough, their specialised convoy-protecting units were doing well in protecting the road from the port of Namibe all the way to Menongue, because this was the main logistical artery for the ATS. However, the convoys travelling the 180-kilometre road from Menongue to Cuito Cuanavale were exposed to repeated ambushes and controlling all 200 kilometres of the road from Cuito Cuanavale to Mavinga was unlikely to be possible – even more so as this was within the reach of the SAAF. On the contrary, the further the FAPLA forces advanced into an area controlled by insurgents for years, the more difficult it would be to keep them supplied. Moreover, the Cubans argued, constant advances would distance the FAPLA ever further from FAPA/DAA radars and air bases, making it difficult to support them from the air. In turn, it would bring Angolan units closer to South African air bases, exposing them to the might of the SAAF. Finally, even should the operation prove successful, the insurgents would have it easy to withdraw into South West Africa, and then return to Angola as soon as possible.⁴

With the Soviets remaining aloof and insistent on their doctrine, the Cubans outright refused to become involved in Operation Second Congress. Indeed, one of the MMCA-officers sarcastically commented, 'If this is the way you are conducting your operations in Afghanistan, no surprise the victory is eluding you'. As result, the Cubans were left out of the related planning.⁵

Woes of the 9th RAC

In the course of preparations for Operation Second Congress, the FAPA/DAA took care to completely overhaul and expand the Saurimo airport, and to repair and extend the runway of

Sokolov's Sinister Plot

Under the Soviet military doctrine developed by the GenStab ever since the late 1950s, and still true in the 1980s, warfare was dominated by the idea of the centralisation of all command, control and communication functions (C3): the Soviet armed forces were to be organised and equipped so that their command could run the battle, essentially 'by remote control'. Nowhere was this as clear as in regards of aerial warfare: the essence of which was the networking of all the available early warning radars, communications, electronics and signals intelligence (COMINT/ELINT/SIGINT), electronic warfare systems, visual observation posts, ground based air defence systems and units equipped with manned interceptors into an IADS. The purpose of the IADS was to enable the command that was running the entire battle to exercise control over the air space. The functionality of the IADS was heavily dependent on the radar network serving it because this was not only used to detect and track enemy aircraft, but also to guide friendly interceptors – to a degree where these could operate effectively even if equipped with underdeveloped navigational platforms. In other words: a build-up of an effective radar network was the essence of aerial warfare Soviet-style. Unsurprisingly, and as discussed in Volume 3 and above, towards the mid-1980s, FAPA/DAA began investing heavily in the development of its own IADS, the RA/DAAA, and the Soviets proved more than happy to supply almost everything necessary. With hindsight, it can be told that, if there was a 'dispassionate' reason for launching an offensive on Mavinga and Jamba, then it was precisely the intention to expand the RA/DAAA so as to cover the whole of Angolan airspace, and close this to the South Africans.

According to a document acquired by the South African military intelligence, published by Dick Lord in his book *From Fledgling to Eagle*, this intention went so far that the plan for Second Congress was actually just a part, the 'first step', of a Soviet-designed plot including most of the countries neighbouring

South Africa. Apparently obtained sometime in early 1985, this multi-page piece of intelligence was a memorandum of the meeting between the Yugoslav Minister of Defence, Admiral Branko Mamula, with Colonel Carreira, as the latter was on the way back from a major conference of top Soviet, Cuban and Angolan military commanders in Moscow in early 1984. Correspondingly, Carreira told Mamula that the Soviet Minister of Defence, Marshal Sergey Leonidovich Sokolov, informed him of Angola's 'important role in the preparation for the final defeat/struggle...of the racist rule in South Africa', as such it was to become the first step in a multi-phase process involving Zimbabwe and Mozambique, in which the three were to establish an integrated air defence system stretching from the Atlantic to the Indian Ocean, capable of providing 'adequate support' for a 'strategic build-up of air power' and provision of 'support for fraternal forces in southern Africa'. In other words, the Soviets intended to 'seal' the airspace of neighbouring countries (bar that of Botswana) from the SAAF, starting from Angola in the west and Mozambique in the east.⁶

As stunning as it sounds at the first glance, and as much as it actually emphasised the importance of air power and air defence, the content of this document enables a logical conclusion about the reasoning for the way that the officers of the SMMA planned Second Congress. For example, Point 10 of that memorandum stressed that South Africa was 'short on long-range air potential', that this was 'unlikely to change in foreseeable future', and 'there are several other shortcomings that are likely to become evident if South Africa was put under real pressure'. Indeed, according to Point 11, Carreira told Mamula that Sokolov informed him '...South Africa's air potential has so far been generally overestimated and that a counter to it can realistically be considered as feasible'. In other words, the Soviets had grossly underestimated the effectiveness and the reach of the SAAF, not to mention Pretoria's determination to fight.



Marshal Sergey Leonidovich Sokolov, Minister of Defence of the Soviet Union from 1984 until 1987, in an official photograph from 1984. (Soviet Ministry of Defence)



Contemporary photograph of Admiral of the Fleet Branko Mamula, Federal Secretary of People's Defence of Yugoslavia from 1982 until 1988. (Federal Ministry of People's Defence of Yugoslavia)



The two primary light AAA weapons of the FAPLA: a 23mm ZU-23 (left) of Soviet origin, and the Yugoslav-made triple-barrel 20mm M55. These short-range air defence weapons remained the primary means of defence of the FAPLA units involved in Second Congress. (SAAB)



Angolan and Soviet troops unloading a D-44 gun from the cargo hold of an Il-76. (via Albert Grandolini)

Cuito Cuanavale. However, the build-up of the fighter-bomber force progressed very slowly and there were several reasons for this. In May 1985, a group of 14 fast jet pilots and 30 technicians returned to Angola from conversion courses in the USSR. About a month later the 9th Fighter Aviation Regiment (Regimento de Aviação de Caça, 9th RAC) – the centrepiece of the FAPA/DAA's fighter-bomber force – then received 12 brand new MiG-23ML interceptors. However, due to the peculiarities of the Soviet pilot-training system (as described in Volume 3), not one of the fliers of the newly-established MiG-23 squadron, commanded by Captain

the Cubans in time, which was not the case. For this reason it was only on 30 August 1985 that the Cubans deployed six of their MiG-23MLs from Lubango to Luena. By then, the offensive had been ongoing for more than a month.

Contained Cubans

Although left out of the loop about the coming offensive, Havana knew that it was coming and thus made the decision to reinforce the FAR presence in Angola. Not only was the total troop strength brought up to nearly 40,000, but additional DAA/FAR pilots and

João Manuel da Silva 'Jojo', was ready for combat. Indeed, at that time the 9th RAC was still commanded by a mere Captain, João Baptista Costa, with a 'mere' 2nd Lieutenant Serafim Eduardo as Deputy Commander. Unsurprisingly, considering the juniority and inexperience of both officers, the regiment required constant and extensive support from Soviet advisors, who were not only busy training novice pilots, but also running its administration and maintenance. However, the Soviets were working to their own training plans, and thus much too slowly for Angolan requirements. Unsurprisingly, da Silva found himself forced to request additional help from the DAA/FAR contingent, as recalled by Alberto Vasquez Aráujo, one of the first Angolan MiG-23 pilots: 'The Cubans helped us a lot with both organisation and training. They were experienced warriors, with excellent organisational skills.'

Still, the delay was sufficient for the Angolan MiG-23 unit to not be ready for Second Congress. Therefore, it fell to the MiG-21 squadrons of the 9th RAC to deploy 14 jets to Saurimo for support of the advance on Cazombo. These were accompanied by 10 Mi-8 and Mi-17s, and four Aérospatiale SE.316/IAR.316 Alouette III helicopters.⁸ Of course, despite the MMCA's critique of the plan for Operation Second Congress, the FAPA/DAA could always count on support of the DAA/FAR's contingent in Angola – all provided it had informed

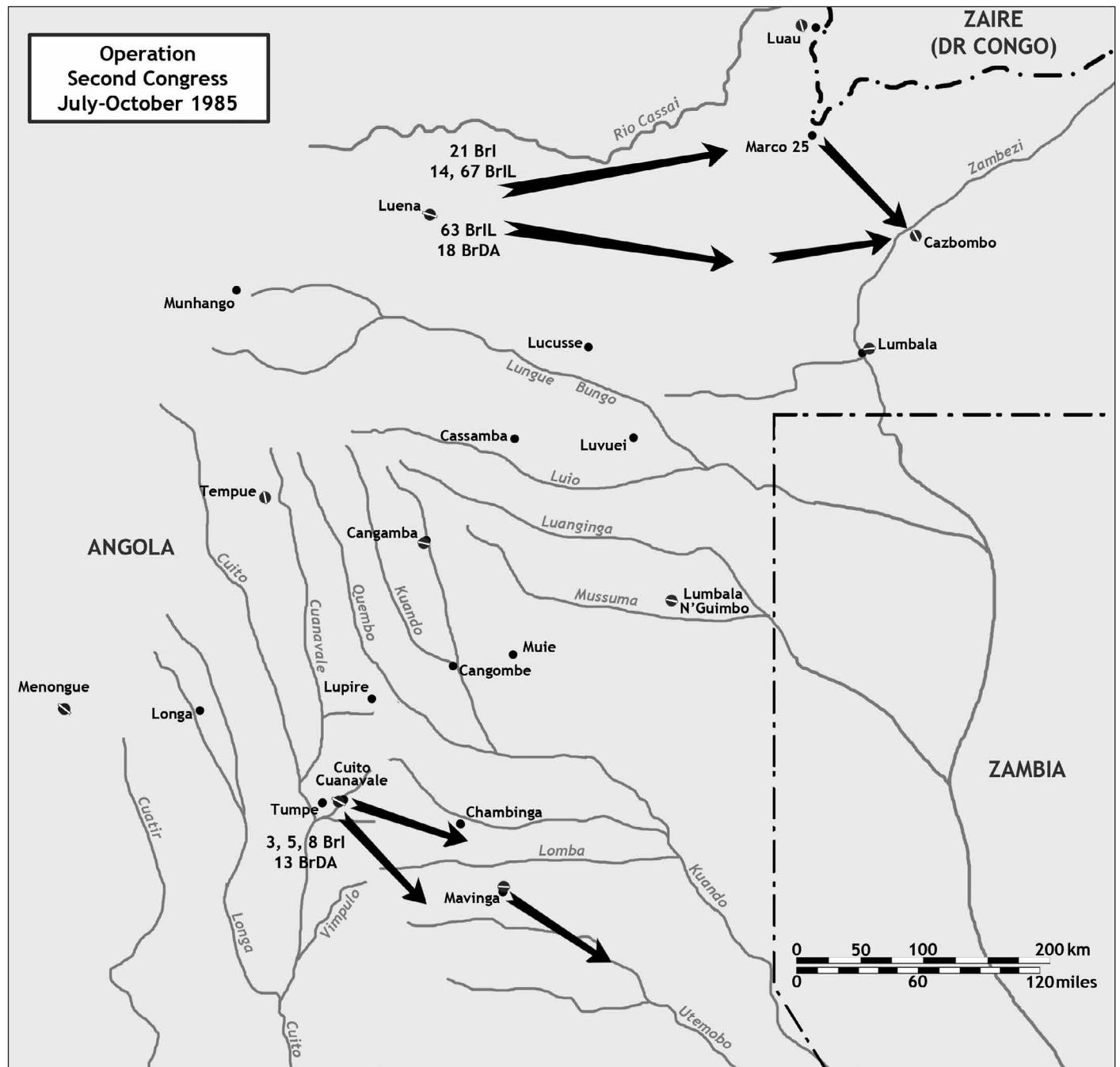
air defence personnel were also deployed. Amongst the latter was Lieutenant-Colonel Eduardo González Sarria, who did a tour of duty in Angola back in 1976 while still a novice MiG-21 pilot. Almost a decade later, much had changed – especially in terms of the intensity with which junior Angolan and Cuban pilots were prepared for combat operations and the tasks assigned to them:

I arrived for my second tour of duty in July 1985, to serve as operational commander of a MiG-23ML squadron. At the time, I was a certified flight instructor 1st Class, with no limitations on day or night flying... There was another ML squadron with Angolan pilots. Most of them were novices and they were flying hard with Soviet instructors because of that... In our unit, we had four Soviet advisors who flew with my 'green' pilots, day and night, to shape them before any was sent over enemy territory. As members of the Warsaw Pact, the Soviet pilots

were prohibited from flying combat sorties, but I asked them to go with me and they did fly a few – without the Soviet top brass being informed. They were ready to go with me to hell if necessary and I was very pleased with their attitude.⁹

Perhaps unexpectedly for outsiders, but perfectly in line with military tactics and security requirements under the given circumstances, the first task of the Cuban MiG-23ML squadron was the provision of top cover for giant Soviet transports that were hauling arms and other equipment from Moscow to Luanda, and also to forward air bases, as González Sarria recalled:

I personally provided top cover for Soviet Antonov An-22s arriving in Lubango. Our MiG-23MLs were not fitted with decoy flare launchers... and lacked light strips for formation flying by night. We therefore never practiced night formation



A map of Operation Second Congress. Notably, the extent of this offensive reached such proportions that even the airport in Saurimo – over 150km north of Luena – had to be overhauled and significantly expanded, with the aim of enabling the continuous presence of up to 20 MiGs and at least as many helicopters. (Map by Tom Cooper)

flying and could not provide such cover by night. The other type deployed by the Soviets, Il-76, did have dispensers for decoy flares and I saw them in Menongue spiralling down for landing, or climbing to leave, and launching these flares.¹⁰

Meeting Engagement

The 3rd Military Region of FAPLA initiated Operation Second Congress on 29 July 1985 by deploying five brigades from Luau along two prongs to converge on Cazombo. The 21st BrI, 14th and 67th BrIL, reinforced by heavy artillery and a battalion of T-54/55 MBTs, advanced along the route from Muccussuege to Marco 25, Candundo, to Cazombo, while the 63rd BrIL – reinforced by elements of the 18th BrDA – advanced from Luacano Lago, to Dilelo, Chiesso, to Cazombo.¹¹ Rather by accident, by then the FALA had concentrated between five and eight of its semi-regular battalions – supported by about a dozen 120mm M1943 mortars

and 76mm ZiS-3 guns, several 23mm ZU-23 AAA and Grad-1P single-rail rocket launchers – in the area about to be entered by the FAPLA, for its own attack on Luau, planned to take place in early September. Thus, the forces of the two parties could not but collide frontally in what military strategists call a ‘meeting engagement’. Constantly supported by air strikes, FAPLA units were capable of exploiting their advantage of firepower and speed: by deploying T-55s and other armoured vehicles into flanking manoeuvres, they forced the insurgent semi-regulars to withdraw. During the first 24 hours they broke through the forward insurgent positions and by 30 August had ponderously advanced 70 kilometres in the direction of Cazombo.

Operation Magneto

As the three battalions of the FALA failed to stop the 14th, 21st and 67th brigades, UNITA requested help from South Africa.

The SADF, which had a seven-man-strong team already deployed in the Cazombo salient, reacted by initiating Operation Magneto. The SAAF first dispatched two mobile air operations teams (MAOTs) to Lumbala Nguimbo and Cazombo, and then – in about 220 flight hours between 23 August and 10 September 1985 – its transports airlifted FALA reinforcements from Jumba to these two airstrips, followed by a small SADF detachment equipped with six French-made Milan ATGM firing posts, two ZRK-BD Strela-1 air defence vehicles (ASCC/NATO-codename ‘SA-9 Gaskin’; these were captured during earlier fighting), a pair of Valkiri multiple rocket



A Valkiri MRLS of the SADF. Each vehicle carried twenty-four 127mm tubes installed on the chassis of a Mercedes Benz UNIMOG 4x4 truck. The Valkiri was air-transportable, easily fitting into the cargo holds of the C-130 Hercules and Transall C.160 operated by No. 28 Squadron, SAAF. (SADF)



Juan Olivares Horta (left) – one of the first group of Cuban pilots to fly MiG-23MLs into combat in August-September 1985 – with Justo Teruel in front of one of their mounts at Lubango AB. (via Luis Dominguez)

launcher systems (MRLS; each Valkiri had twenty-four 127mm calibre launch-tubes installed on a Mercedes Benz UNIMOG 4x4 truck chassis), and a team of artillery-troops, tasked with advising the insurgent gunners.

In turn, when encountering stiff resistance, the headquarters of the 3rd Military Region requested help from the MMCA, and on 30 August the DAA/FAR contingent at Lubango AB was ordered to redeploy six MiG-23MLs to Luena, including the aircraft and pilots listed in Table 5. The Cuban-operated MiG-23MLs are known to have flown their first combat sorties in the Cazombo salient on 31 August 1985, in support of the troops of the 63rd BrIL attacking the FALA in the village of Nana Candundo, almost 300 kilometres (about 200 miles) east of Luena. Each aircraft was armed with two UB-16-57 pods for 57mm S-5 unguided rockets and a full load of ammunition for internal 23mm GSh-23 guns. The next day, they bombed the insurgents outside Nana Candundo with FAB-500M-62 bombs. On 4 September, Cuban-flown MiG-23MLs flew close air support for the 14th BrIL and the 21st BrI in the same area, while a day later they bombed the FALA anti-aircraft artillery deployed for protection of the airstrip outside Cazombo.¹²

Exposed to such strikes, Savimbi's insurgents were crying out for help and thus the two SADF Valkries went into action on 4 September 1985. Henceforth, their crews would periodically unleash volleys of rockets by night, before quickly moving to a new position. However, neither their presence nor that of other South African troops proved enough to stop the FAPLA: indeed, by 9 September 1985 the South Africans concluded that neither they nor the FALA were capable of countering simultaneous enemy advances in the Moxico and the Cuito Cuanavale provinces, and decided to concentrate on protecting the south-eastern 'corner' of Angola only. Correspondingly, the SAAF transports were deployed to evacuate the MRLS teams from Cazombo and Lumbala back to Mavinga. Moreover, they flew out about 1,100 combatants, five ZiS-3 guns, six 120mm mortars, three ZU-23 light AAA guns, and four Grad-1Ps in the same direction.

There is no indication that the FAPA/DAA attempted to deploy any of its own – or Cuban-flown – interceptors to hinder this activity. On the contrary, after flying 82 combat sorties, all six Cuban MiG-23MLs forward deployed at Luena were back in Lubango by 15 September 1985. The SAAF transports and the mass of the FALA thus came out of the Cazombo salient unscathed. However, the evacuation was not completed flawlessly. On 15 September, a Toyota LandCruiser carrying three South African artillery advisors (Major Coetzee, Lieutenant Phillipson, and mechanical orderly Lance Corporal Fidler), ran into an ambush outside Cazombo. A hit from an RPG-7 destroyed the vehicle and killed Fidler; badly shaken, the two officers managed to escape. However, this was 'good enough' because the recovery of the corporal's body was quickly converted by Luanda into a major propaganda coup: after all, under the Lusaka Accords of 1984, the South Africans were supposed to have no troops in Angola, even less to support UNITA.

Ultimately, the FALA, and the SADF attachments, failed to derail the FAPLA drive into the Cazombo salient: Cazombo was thus secured by three brigades of the Angolan army on 19 September 1985, even if the 63rd BrIL managed to reach it only weeks later. However, the insurgents and South Africans did manage to make it a protracted and costly enterprise: the 3rd Military Region FAPLA is known to have lost 737 killed in action between 1 August and 31 October 1985, together with one of Soviet advisors that was killed, while three T-55s, three BRDM-2s and one BM-21 were written off. Moreover, in the wake of the withdrawal of their best forces and all heavy weapons from this part of Angola, the insurgents still managed to retain a foothold in the salient and fiercely oppose further FAPLA advances, meanwhile plagued by constantly increasing logistics-related difficulties.¹³



A view from the window of a Mi-25 at the terrain in the Cazombo salient in 1985: the latter was not as flat and featureless as that south-east of Cuito Cuanavale, but still represented a navigational challenge for young Angolan and Cuban fliers. In the foreground two of the Mi-25's UB-16-57 pods for unguided rockets are visible. (FAPLA)

Table 5: DAA/FAR MiG-23s and Pilots at Luena AB, August-September 1985

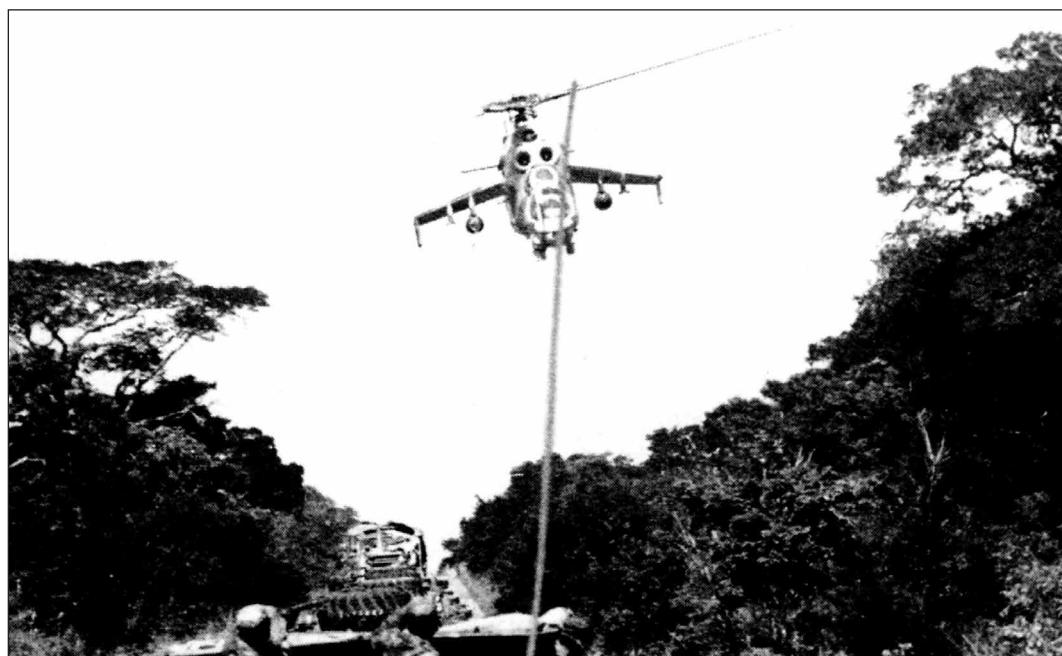
MiG-23ML Serial	Pilot
C402	Eduardo Carrillo Calderón
C404	Alberto Pérez
C406	Pedro Zequeira Moreno
C408	Luis Raul González Pardo
C410	Juan Cosme Proenza
C421	Juan Olivares Horta

Travelling Light

Even if the FAPLA advance into the Cazombo salient thus ended in a clear-cut, albeit incomplete victory, the advance on Mavinga (and then on Jamba), ended in a diametrically opposite fashion. According to the planning of the SMMA, the 6th Military Region FAPLA organised the 3rd, 5th and 8th BrI reinforced by the 13th BrDA into two columns, one of which was to approach Mavinga from the north, and the other from north-west. The main headquarters of the offensive were set up in Menongue, while the forward headquarters were in Cuito Cuanavale, and the operation was expected to take between 50 and 60 days to conclude. Considering the declared importance of this enterprise, the four involved brigades were at only about 60-70 percent of their nominal strength, thus including about 5,000 troops in total (plus about 60 Soviet advisors), and travelling light: they were supported by about a company of PT-76s, 30 APCs, 14 BM-14 and BM-21 MRLS, and 72 mortars of various calibre, while the mass of their vehicles consisted of unprotected jeeps and trucks. Still, this was considered 'sufficient' because the intelligence assessed that the FALA would be hard-pressed to mobilise more than 15 battalions for the defence of Mavinga, and these would be at about 60 percent strength. Moreover, the Soviets expected the South Africans to stay out of the battle and the SAAF not to become involved at all. Correspondingly, each of the brigades was protected only by a battery of six ZU-23 towed AAA guns,



A pair of BM-21s of the FAPLA navigating down a dirt track during Operation Second Congress. (Albert Grandolini Collection)



A convoy of supply trucks rolling down the road from Cuito Cuanavale, protected by an Mi-25. Notably, to stretch the range, the latter was armed with only two UB-32-57 pods for 57mm S-5 rockets (in addition to the machine gun installed in the barbette under the chin). (Albert Grandolini Collection)

in addition to their organic anti-aircraft elements armed with 14.5mm ZPU-4s and SA-7s.

For entirely unexplainable reasons, the southern prong of Operation Second Congress also received much less air support than the push into the Cazombo salient. The Cubans were not even informed about details of this operation until much later. However, what exactly happened with the FAPA/DAA is unclear: Angolan sources do mention its intensive involvement, but when all their details are cross-examined, it transpires that only a squadron of MiG-21s deployed to Menongue AB, while four Mi-25s, two Mi-8s, four Mi-17s and two Alouette IIIIs were forward deployed at Cuito Cuanavale. Certainly enough, a detachment of BN-2s seems to have been present at Menongue before the offensive was launched, with the task of flying reconnaissance along the road to Cuito Cuanavale. However, one of its aircraft (serial R-202) was shot down by a MANPAD on 11 June 1985, with the loss of everybody on board. When a pair of Mi-17s was scrambled to investigate, one of them was shot down as well,

again by a MANPAD, with the loss of the entire crew. While the Angolans suspected South African involvement, the deployment of BN-2s on this battlefield is not mentioned with a single word afterwards, indicating that the slow and vulnerable Islanders were subsequently withdrawn. Finally, while up to six An-26s were deployed to haul supplies from Luanda, Huambo and elsewhere to Menongue and Cuito Cuanavale, this part of the offensive received no support from any reconnaissance aircraft meanwhile in service. Thus, in grand total, what was widely declared as ‘the most important operation of the FAPLA ever’ – received much less air support than could be expected.¹⁴

Long Road to Mavinga¹⁵

The southern prong of Operation Southern Congress was opened with several air strikes against known FALA bases. It remains unknown exactly how effective these were: what is known is that on 12 August 1985 a MiG-21bis from Menongue – serial C329 – was shot down and its pilot, 2nd Lieutenant António Domingos ‘Mingo’, killed. The ground forces moved out of Cuito Cuanavale six days later: the 8th BrI and the 13th BrDA were in front, the

3rd and 5th BrI followed up, moving ponderously even if their infantry advanced on foot. Almost instantly, it became obvious that their commanders were not familiar with the terrain: most of the area east and south of Cuito Cuanavale had already been vacated by the FAPLA years before and no long-range reconnaissance on the ground was attempted prior to the offensive. The FAPA/DAA did attempt to compensate through deployment of its helicopters from Cuito Cuanavale. However, on 29 August 1985, one of two Mi-25s flying armed reconnaissance along the road to Mavinga was shot down by ground fire, killing the crew of two.

What was actually going on was exactly what the Cubans expected: the further away from Cuito Cuanavale the Angolan ground forces moved, the more isolated their four brigades became: before long, all were low on water, food and ammunition and only in control of the space in which they were currently moving. Slowed down by frequent ambushes and heavily mined roads and dirt tracks, supply convoys began experiencing ever bigger problems while trying to reach them: the last known to



A Mi-8T overflying a convoy of supply trucks stopped either by mines, or another of the insurgent's ambushes. (Albert Grandolini Collection)



Roads are always reasonably good runways, and thus the pilot of this Mi-8T used one to land and pick up casualties for evacuation. (Albert Grandolini Collection)

have successfully delivered did so on 11 September 1985. Three days later, the two FAPLA columns reached the Lomba River, 30 kilometres short of Mavinga. At this point in time, it turned out that all units had too few combat engineers and much too little bridging equipment: there was not enough of the latter to enable a simultaneous crossing by two columns. Therefore, all four brigades assembled in the same spot, on 15 September, before moving over the river: this enabled the FALA to concentrate all of its available forces – including the recently-established 1st, 2nd, and 3rd regular battalions, 15th, 18th, 49th, 75th, 118th, 154th and 179th semi-regular battalions – into a line of trenches across the line of enemy advance, and also to the rear of the enemy formation.

Operation Wallpaper

UNITA was perfectly aware that it could not prevent the loss of Mavinga: indeed, Savimbi had already called for help, triggering

a powerful reaction from Pretoria. During the night from 6 to 7 September 1985, the bulk of the 32nd 'Buffalo' Battalion SADF – about 420 troops organised in three companies, a reconnaissance team and a platoon of 81mm mortars, all wearing FALA uniforms – was airlifted to Mavinga, thus starting Operation Wallpaper. When, early in the morning, a pair of Cuban-flown MiG-21PFMs attempted to catch one of the involved SAAF transports, the jet flown by 2nd Lieutenant Lorenzo Morales Ramos was shot down by a MANPAD and the pilot killed. The C-130 and C.160 transports of No. 28 Squadron, SAAF, were thus free to evacuate not only the two Valkiri MRLS teams and two FALA anti-aircraft batteries from the Cazombo salient to Mavinga, between 10 and 15 September, but to fly-in thousands of 127mm rockets for the Valkiris, enabling them to conduct no fewer than 37 fire missions over the following days, thus further slowing down the FAPLA advance.¹⁶

As in the case of the 3rd Military Region, when facing such ferocious resistance, the HQ 6th Military Region eventually found no solution but to call the Cubans for help. The MMCA reacted by ordering six pilots and six MiG-23MLs commanded by Eduardo González Sarria

(and including Juan Francisco Alfonso Doval) to Menongue AB on 13 September 1985. These began flying combat operations the following day: amongst others, two were dispatched to fly top cover for a pair of Mi-17s (escorted by a pair of Mi-25s) that first delivered supplies to the 5th BrI, and then evacuated Soviet Colonels Yuri Panchenko and Dmitry Dimitrievich Kirichek, who were wounded in one of FALA's harassing attacks. More importantly, the Cuban presence instilled confidence within the ranks of the FAPA/DAA pilots, many of whom were now exhausted from two months of intensive operation, and were on the verge of refusing to fly.¹⁷

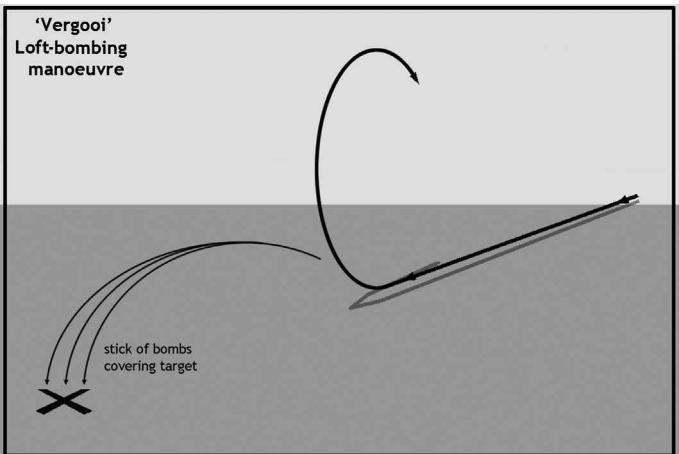
Subsequently, González Sarria's MiG-23 pilots did their utmost to locate and destroy the enemy artillery: unlike the shorter-ranged Angolan MiG-21s, they could deploy the heavy and draggy OFAB-500 bombs filled with incendiaries to burn down the vegetation under which the enemy was hiding. On the other



A typical end result of an air strike by Angolan or Cuban fighter-bombers in the 1985-1987 period: the fin of a Soviet-made FAB-260M-62 bomb that dug itself deep into the soft, sandy soil and then failed to detonate. This happened regularly, mainly due to the use of contact fuses. Of course, except for one that hit an enemy soldier 'in the heart', such failures made close air support entirely pointless. (Albert Grandolini Collection)



A typical scene during every advance of the FAPLA in 1985, or, in this case, the movement of a supply convoy: as soon as one of the vehicles was knocked out – whether by mine or an insurgent ambush – or suffered any other kind of mishap or malfunction, all movement had to stop until casualties were evacuated, the road cleared, and the vehicle repaired (if this was still possible) or unloaded (if irreparable). Note the Mi-25, the crew of which was keeping an eye on possible insurgents nearby. (Albert Grandolini Collection)



On 16 October 1985, SAAF Mirage F.1AZ pilots inaugurated a new attack profile. Called 'Vergooi', this was flown from approach at low altitude, and resulted in bombs being 'lobbed' (or 'tossed') in the direction of the target. With bombs being released within milliseconds of each other, they came down to the ground as a 'stick', usually aimed 'across' the path of enemy movement or formation. Immediately after releasing bombs (whether locally manufactured versions of US-designed Mk.81s, or, later on, Mk.82s), the pilot pulled the aircraft into a hard turn, designed to break the lock-on of seeker heads of Angolan-operated MANPADs. (Diagram by Tom Cooper)

hand, their strikes with general purpose bombs were less effective: equipped with contact fuses, these tended to bury themselves deep into the soft, sandy soil of the battlefield before – if doing so at all – detonating upwards, and thus causing next to no damage. The actions of the Cuban-flown MiG-23s did eventually force the SADF units to stop moving and hide by day and deploy their weapons only by night, and all the activity of No. 28 Squadron's transports was limited to the hours of darkness. Furthermore, both Cuban and FAPA/DAA jets frequently targeted the known UNITA bases: on 16 September alone, 14 fighter-bombers were deployed to destroy just one of these. Nevertheless, the two SADF-operated SA-9s never managed to engage any of the enemy aircraft above them.

SAAF in Action

The chain of action and reaction went on: when Cuban-operated MiG-23s appeared over the battlefield on the Lomba River, the South Africans ordered their own air force into action. Following obligatory reconnaissance by Dassault Mirage IIIRZs of the SAAF, by 17 September 1985 10 Dassault Mirage F.1AZ and seven F.1CZs, several Blackburn Buccaneers, English Electric Canberras and Atlas Impala Mk IIs were concentrated at the northernmost forward air bases in South West Africa. They flew their first strikes on Angolan units advancing on Mavinga later the same day. Initially at least, the South African pilots flew high, to



Angolan and Soviet pilots of the future 26th RACB flew their first combat sorties on Su-22s during the Second Angolan War when four of its Su-22s were deployed to Menongue in Operation Second Congress in September–October 1985. This photograph shows a trio of Su-22s (including C510, first from the left and C501, third from the left), and a Su-22UM two-seat conversion trainer (I31, first from right) at Namibe AB, in 1987. Barely notable in the far background between the two aircraft to the right is a BTR-40 patrolling the base perimeter. (Albert Grandolini Collection)



A Mirage F.1AZ of the SAAF seen in one of the classic weapons configurations of the 1981–1985 period: a V3B Kukri air-to-air missile on the wingtip, and a total of six French-designed SAMP Type 21 250kg bombs. (SAAF)

remain outside the envelope of enemy anti-aircraft defences. However, before long it became obvious that this resulted in very poor precision, as their attacks knocked out only one BM-14 MRLS, killed three troops and wounded five. However, the more air strikes they flew, the more damage they caused, especially once the SAAF began deploying domestic redesigns of the US 125kg Mk.81 bombs. Instead of relying solely on the overpressure caused by their explosive content and shrapnel of their casings, these were fitted with Jupiter proximity fuses set to detonate them high above the ground, and filled with ball bearings dispersed on detonation, greatly increasing their lethality.¹⁸

Eventually, the SAAF Canberras and fighter-bombers flew 551 hours of combat during Operation Second Congress. Combined with the loss of another Angolan MiG-21bis – the aircraft flown by 2nd Lieutenant Francisco Matamba ‘Kico’, shot down by a MANPAD with the loss of the pilot – this prompted the Cubans to reinforce their detachment at Menongue with five additional pilots, six MiG-23MLs and one MiG-23UB, on 4 October 1985. The FAPA/DAA followed by adding a detachment of four Su-22s of the 26th RACB, and thus some Cuban pilots flew top cover for Angolan Sukhois with their MiG-23MLs armed with R-24R and R-24T (ASCC/NATO-codename ‘AA-7 Apex’) and R-60MK (ASCC/NATO-codename ‘AA-8 Aphid’) air-to-air missiles, as recalled by González Sarria:

Many times, I provided top cover for Sukhois delivering ordnance on targets in the Mavinga region. The first batch of

Table 6: Total Flight Time of SAAF Combat Aircraft during Operations Magneto, Wallpaper, and Weldmesh²²

Aircraft Type	Flight Time
Buccaneer	37 hours
Canberra	69 hours
Impala II	241 hours
Mirage F.1AZ	171 hours
Mirage F.1CZ	33 hours
total	551 hours

these big fighter-bombers, easily identifiable by an undernose fairing that carried a Doppler navigation radar, was designated ‘Su-22M-4’ by the Angolans. During Operation Second Congress, they were flown by a mix of Angolan and Soviet pilots.¹⁹

In reaction to the reinforced appearance of the MiG-23s, the SAAF pilots changed their modus operandi and began flying at very low altitudes. With the battlefield far away from Cuito Cuanavale and Menongue, their movements could not be tracked by radars of the RA/DAAS anymore. Moreover, even the longer-ranged MiG-23MLs could remain on station for only about 10–15 minutes when that far from their base, while – for reasons described in detail in the Volume 3 – their radars were not designed

for autonomous operations. Unsurprisingly, Cuban pilots not only never caught any of the marauding South Africans, but actually began exposing themselves to the threat of enemy interception: in an attempt to save fuel and extend their time on station, MiG pilots flew high and slow thus exposing themselves to detection by SAAF early warning radars. Even if the South Africans seem not to have attempted to shoot down any of the high-flying MiG-23s, at least they could time their own air strikes so that these took place when the MiGs were short on fuel and had to return to base.²⁰

Ultimately, the Cuban assessment that the air power would be crucial for the outcome of Operation Second Congress – and that their own air power would be unable to intervene on the distant battlefield in south-eastern Angola – proved ‘spot on’. Despite DAA/FAR MiG-23ML pilots doing their utmost and flying 206 combat sorties in support of the southern prong of Operation Second Congress (both CAPs and battlefield air interdiction, BAI), they achieved too little.²¹

LOGISTIC PROBLEMS

Regardless of their constantly improving effectiveness, initially at least, the SAAF air strikes failed to stop the FAPLA offensive. On the contrary, the four brigades continued grinding down the FALA, and continued advancing. Although the Angolans had lost another of their MiG-21bis on 23 September – when 2nd Lieutenant António Manuel Cabral de Sousa ‘Rex’ was shot down but successfully recovered by Mi-17s – five days later the ground forces breached the insurgent forward defence line, just 17 kilometres short of Mavinga. It was only after this point in time that the accumulated effects of the air strikes and continuous harassment of the communication links by insurgents began showing their impact: by 30 September, it became impossible for supply convoys to reach the four brigades involved in the advance. For all practical purposes, these four Angolan brigades and about 60 Soviet advisors were now cut off from the outside world.²³

The headquarters of the 6th Military Region reacted by scrambling the FAPA/DAA into an air bridge from Menongue and Cuito Cuanavale: Cuban and Angolan-operated Mi-8s, Mi-17s and Alouettes – always escorted by pairs of Mi-25s – had already been delivering necessary food, water, munitions and spares to the isolated units for days. From 29 September, their operations

were further intensified, as the needs of isolated ground units continued to grow: the situation reached a point at which even the cabins of escorting Mi-25s were loaded with at least two 100-litre fuel drums. To avoid small-arms fire, all such missions were flown by between two and four transport helicopters underway at an altitude of 1,000 to 2,000 metres, with two escorting Mi-25s following about 1,000–2,000 metres behind.

At the time, the RA/DAAS coverage of south-eastern Angola was very poor. There were no navigational aids, meaning that the Angolan and Cuban crews found themselves operating over a featureless – flat and bush-covered – terrain while flying aircraft and helicopters poorly equipped for autonomous operations. Finding no other aids, they began using the road from Cuito Cuanavale to Mavinga and the two Lomba River tributaries for orientation. To make matters worse, they always flew their supply missions around the same time of day, and they flew high enough to be picked up by South African early warning radars. Every helicopter formation was escorted by a pair of MiG-21s or MiG-23MLs armed with air-to-air missiles; however, to save fuel, and because of major differences in speed, these always orbited at an altitude of 5,000 metres – thus also in full view of South African radars. With not only the routes, but the timings of the Angolan and Cuban formations becoming predictable and easy to track, and due to the lax communication security of the Angolans and Cubans, this became an opportunity the SAAF just could not miss.

Doomed Airbridge

As soon as South African military intelligence became aware of the regular movement of enemy helicopters, the idea was born to set up an aerial ambush. Experienced pilots from the Impala Mk II-equipped No. 8 Squadron, SAAF, were picked to conduct exercises in interception of slow-flying helicopters, using their internal 30mm guns only. Eventually, a plan of action came into being in which the Impalas would fly at extremely low altitude (50ft/about 15 metres) to a position about 35km south-west of Cuito Cuanavale, and then wait for a signal from the ground control that the helicopters were underway. In turn, because the early warning radar at the nearest SAAF air base – Rundu, in northern South West Africa – could not detect targets flying at less than 6,000 metres (19,685ft), it relied on information provided by a team of



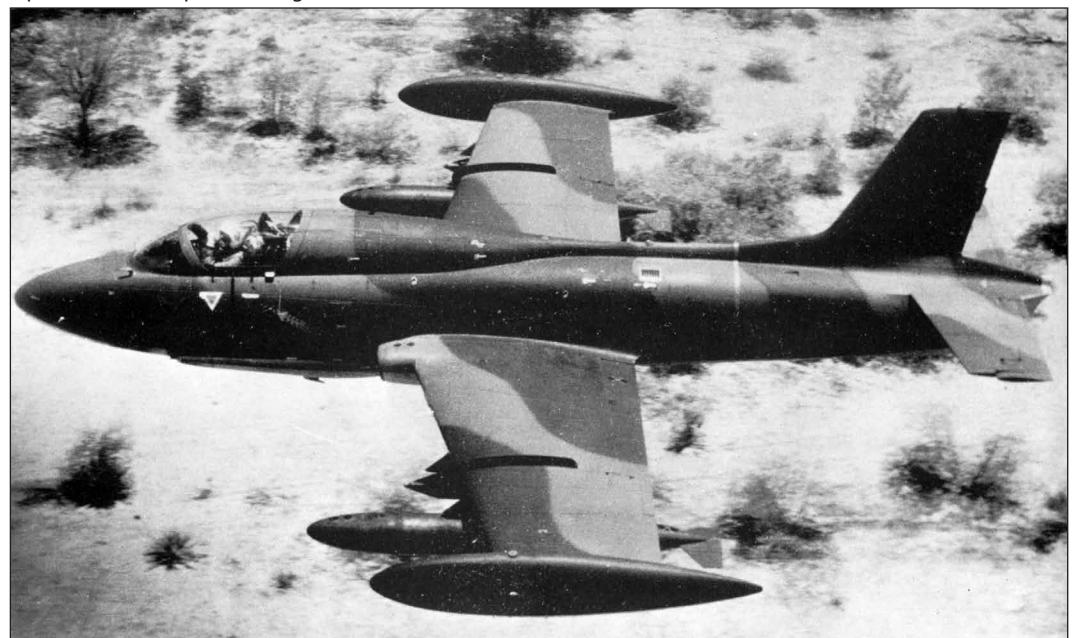
The requirement to not only fly armed reconnaissance ahead of advancing FAPLA units, or top cover for supply convoys, and to keep these supplied – at least with fuel – put the Angolan and Cuban Mi-25 crews under immense pressure. This example (probably serial H302) was photographed at Cuito Cuanavale in 1985, while receiving maintenance on its engines. Two of the ground crew can be seen re-loading S-5 rockets into an UB-32-57 pod, while the service truck is parked nearby to provide power and to refuel the gunship. (Albert Grandolini Collection)

reconnaissance commandos, forward deployed in the vicinity of Cuito Cuanavale. The latter began reporting all helicopter movements from that base, in turn prompting several scrambles of Impalas: four attempts were unsuccessful before on 27 September 1985 – the same day that FAPLA ground forces punched through the first line of insurgent defences of Mavinga – the fifth call reached Rundu AB. Captain Pine Pienaar and Captain Leon Maré were scrambled into the fifth attempt, about which Pienaar recalled:

We were airborne in minutes ... Thirty-two minutes after getting airborne, we were waiting for them over one of the Lomba's tributaries, eyes searching the sky. We were turning towards the second river, when my eyes snapped back to something.... There they were, two helicopters on our two o'clock positions, one trailing the other by approximately 1,000 metres... Time turned into treacle and it seemed forever as I closed the range. Then – dammit! – I'd overcooked the attack, ending up about 700 metres behind the Mi-25. I bunted the aircraft to accelerate to decent fighting speed. The ideal cannon range was 350 metres, but when I reached my next firing position, I was still about 500 metres behind it. I was furious with myself ... Rather than taking more time to close the range, I aimed slightly above my chopper and pulled the trigger, firing for what seemed an awfully long time. There were bright flashes, followed by an audible whoof and the chopper started burning from underneath. The flames stopped, replaced by brown smoke.... In desperation, I firewalled the throttle. With only empty drop tanks under the wings, the Impala accelerated quickly. I chopped power and



A Mi-8T of the FAPA/DAA, as photographed by South Africans during negotiations that led to the Lusaka Treaty in 1984. Notable is the camouflage pattern in chocolate brown and dark green on upper surfaces and sides, and a pair of UB-16-57 pods for unguided rockets. (SADF)

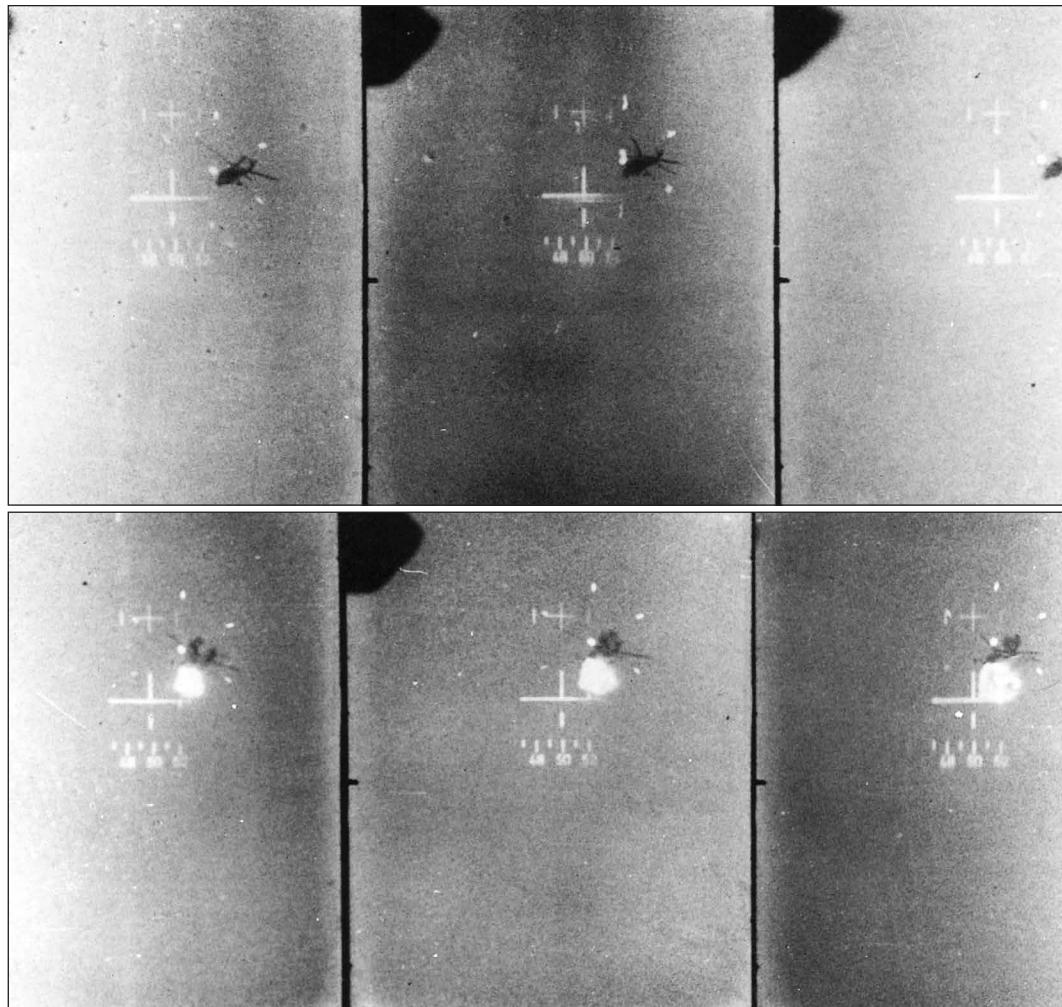


An Impala Mk II of the SAAF, seen while underway at very low altitude. This aircraft was configured with two wingtip tanks and two underwing drop tanks only, for extended endurance, exactly as during the interceptions of Angolan helicopters on 27 and 29 September 1985. (SAAF)



A Mi-17 of the FAPA/DAA seen through the visor of one of the Impalas involved in the interceptions of 27 or 29 September 1985. Visible in the background is one of the Lomba's tributaries, used by Angolan and Cuban pilots for navigation purposes. (SAAF)

found myself alongside. Hunched forward in their separate cockpits, both Cuban pilots were clearly visible and busy...



A sequence of stills from a gun-camera of another Impala, showing attack on one of two Mi-25s shot down on 29 September 1985. Notably, the Impala pilot put his piper slightly ahead of the helicopter, leading the target to compensate for its movement. Clearly visible on the latter three stills is the fireball – probably caused by hits into the fuel tank. (SAAF)

through the three square windows in the cabin behind the aircraft commander I saw a lots of Cuban faces, all staring at me in horror. They knew.... The Mi-25 started a gentle left-hand turn back towards Cuito Cuanavale. I pulled up and over, positioning myself on the outside of the rear-quarter attack that I had practised so many times. Allowing the chopper to pull away, I rolled in from my perch position, mentally reciting each step. It was straight out of the manuals.... Fire. There was a sparking ripple of hits along the cowling, the high explosive shells tearing apart engines, drive shaft and gearbox. The helicopter rolled violently onto its side, blades folding into a tangled mess and I knew this particular Mi-25 was going nowhere.²⁴

The first Mi-25 was still in its terminal dive towards the ground, when Leon Maré attacked the second: fired from a range of about 500 metres, his burst of 19 shells hit the rear fuselage, causing a fire. Still under control, the helicopter entered a dive and the pilot fired all of its unguided rockets and then jettisoned all the UB-32-57 pods to make the machine lighter. This proved insufficient, however, and the helicopter hit the ground very hard. Both crews of the Mi-25s were killed. Both Impalas immediately descended back to very low altitude and returned back to Rundu AB without further incidents.

Incredibly, there was no reaction from the FAPA/DAA: unaware of its helicopters being ambushed by the SAAF – all were claimed as shot down by UNITA – it continued resupply operations along

exactly the same pattern. On 29 September 1985, around 09.00hrs in the morning, two Mi-17s escorted by Mi-25s reached positions of the 25th BRI, unloaded their cargo and took off loaded with about a dozen battlefield casualties. Of course, their take-off from Cuito Cuanavale was reported by South African reconnaissance commandos to Rundu AB, and by the time the helicopters were on the way back to base the SAAF had six Impalas airborne deep inside Angola. Two of these were forced to withdraw when overflowed by a pair of MiG-21s, the pilots of which failed to detect them. The other four continued their mission. Captain Wayne Westoby was the first to detect their targets and, being in a favourable position, initiate an attack. He climbed, bringing his aircraft about 300 metres above the rearmost Mi-25, approached within gun-range and fired a long burst. The helicopter caught fire but, surprisingly, continued flying. Indeed, it began outdistancing the Impala whose engine flamed out

after a steep climb and due to ingesting gun-smoke. Meanwhile, Westoby's wingman, Captain Nefie van den Heever, passed by the burning Mi-25 to attack the other one. He opened fire from a range of 500 metres, hitting the boom and the rotor. The result was an explosion that ripped apart the entire rear of the helicopter and sent the forward fuselage spiralling into the ground.

By now, the crews of the two Mi-17s flying in front had realised that the formation was under attack. Thus, Westoby, after relighting his engine, ignored the burning Mi-25 and attacked the rearmost Mi-17. The pilot initiated a full rudder turn in attempt to evade but it was too late: Westoby's shells caused the helicopter to flip over and then fall straight to the ground, exploding on impact. Flown by 2nd Lieutenant Manuel Fernandes Valente and his co-pilot, Nito and carrying a 2nd Lieutenant of the FAPLA, the remaining Mi-17 descended to very low altitude, attempting to escape. Determined not to let it get away, van den Heever and Westoby called the other pair of Impalas to help them search for it. A few minutes later, Captain Kevin Truter, the leader of the second South African formation, was on the scene and sighted Fernandes Valente's helicopter now climbing slightly higher: obviously, the crew saw the first two Impalas departing and decided it was safe to fly higher. It was not. Approaching from the rear, Truter cut the range and was about to open fire when the Mi-17 made a hard turn and then dived for the ground: ultimately, Fernandes Valente crash-landed the helicopter in amongst the trees, losing all the blades of the main rotor in the process. Contrary to most

reports, the pilot, co-pilot and the passenger of the last Mi-17 all survived. Badly shaken, they quickly jumped out of the helicopter that caught fire shortly later. However, while fleeing from pursuing insurgents, they became separated: only Fernandes Valente and the FAPLA officer managed to reach Cuito alive, after an ordeal lasting four and five days, respectively.²⁵

Demise of the Alouette Flight

In the light of this catastrophe, the HQ 6th Military Region promptly cancelled operations of Mi-17s and Mi-25s over the battlefield. Instead, a detachment of four Alouette IIIIs commanded by 1st Lieutenant António Nunes de Sousa Felício 'Dadá' was rushed from Luena to Cuito Cuanavale. Their helicopters were smaller, and poorly protected, but faster and nimbler, and thus expected to be able to reach the isolated units without being molested by what the Angolans still perceived was the threat of UNITA's MANPADs.

Tragically, their crews were to pay a dear price. After several days of successful operations, and while entirely missed by the SAAF, the activities of Felício's Alouette flight were identified by the FALA, and the insurgents set up an ambush. On 6 October 1985, the helicopter piloted by 2nd Lieutenant Hélder Domingos Garcia was shot down by FALA small-arms fire, while another was damaged but the crew managed to return it safely to Cuito Cuanavale. Ignoring the loss, Felício's crews continued flying – and

did so along exactly the same route: as soon as the damaged helicopter was repaired, a few hours later, three Alouettes were airborne again. Unsurprisingly, they ran into exactly the same ambush, with catastrophic consequences: all three were heavily hit. Helicopters piloted by 2nd Lieutenants Inácio André Manuel and Victor Hugo Castelo Branco were shot down with the loss of their crews. The one piloted by 1st Lieutenant Felício 'Dadá' was

Table 7: FAPA/DAA Helicopters shot down during Operation Second Congress²⁸

Date	Type	Notes
27 Sep 1985	Mi-25	2nd Lieutenant Felisberto Matias Bessa and gunner killed
27 Sep 1985	Mi-25	2nd Lieutenant António José dos Santos Neto 'Bully' and gunner killed
29 Sep 1985	Mi-17	Lieutenant Leon Arcides (DAA/FAR) and 2nd Lieutenant José António Neto 'Antena Bravo', flight technician and 12 or 15 passengers killed
29 Sep 1985	Mi-17	2nd Lieutenant Manuel Fernandes Valente 'Nendo Katchiop', co-pilot Nito and FAPLA 2nd Lieutenant survived, but only Katchiop and the FAPLA officer reached own positions
29 Sep 1985	Mi-25	Lieutenant Diógenes da Silva Neto 'Didi Panguila' and gunner killed
29 Sep 1985	Mi-25	Lieutenant José Manuel Gomes 'N'jila' and gunner killed
6 Oct 1985	SE.316B	2nd Lieutenant Hélder Domingos Garcia and co-pilot killed
6 Oct 1985	SE.316B	2nd Lieutenant Inácio André Manuel and co-pilot killed
6 Oct 1985	SE.316B	2nd Lieutenant Victor Hugo Castelo Branco and co-pilot killed



A group of FALA insurgents inspecting the wreckage of a Mi-25 of the FAPA/DAA in the flat savannah south of Cuito Cuanavale. (AI J Venter)



The catastrophe that befell the Angolan/Cuban Mi-17/25 detachment forward deployed in Cuito Cuanavale on 27 and 29 September 1985, resulted in the burden of further operations of this kind being placed upon the crews of Angolan Alouette IIIIs. The flight commanded by 1st Lieutenant Felício did its best but was annihilated in the course of just a few hours on 6 October 1985. This cannon-equipped example (serial U-227) was photographed in the 1990s. (FAPLA)

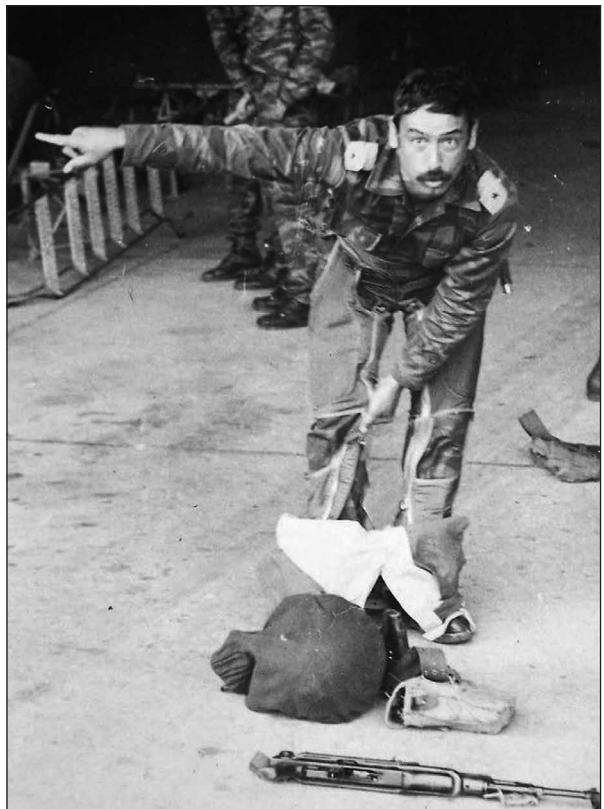
badly damaged and the pilot injured but managed to return safely back to Cuito Cuanavale.²⁶

Only now, after losing no fewer than four Mi-25s, two Mi-17s and three Alouette IIIIs – together with 18 pilots, co-pilots and other crewmembers – did the FAPA/DAA abort the airbridge. With the sole remaining link between isolated FAPLA brigades and Cuito Cuanavale severed, and all four brigades on a logistical shoestring for weeks, the HQ 6th Military Region was left with no choice

but to recall the offensive and order its ground troops to withdraw into defensible positions. A withdrawal is never easy, especially not when conducted by battered units, consisting of semi-starved and thirsty survivors of numerous SAAF air strikes and artillery barrages, consistently pursued by the enemy. Nevertheless, the FAPLA concluded this manoeuvre in good order, resulting in the four brigades entrenching themselves in a defence line along the Cunjamba River, between 4 and 7 October 1985. Once again, the FAPA/DAA provided as much close air support as it could, but once again it lost a MiG-21bis: the jet piloted by 2nd Lieutenant Francisco Matamba was shot down on 5 October, and the pilot captured by insurgents.²⁷

Successful Recovery

Even once they entrenched themselves along the Cunjamba River, the four FAPLA brigades were still under pressure: the FALA continued harassing them, and the SAAF fighter-bombers flew additional air strikes. Indeed, before long the Angolans were facing the threat of outright annihilation: not only was there not enough fuel for all their vehicles, but strict firing discipline had to be imposed to preserve dwindling stocks of ammunition, while most of the troops were on the verge of starvation. In shameful ignorance of their loyal allies, the Soviets meanwhile decided to evacuate their advisors: between 21 September and 5 October 1985, these were flown out by Mi-17s. The HQ 6th Military Region then launched a new resupply attempt: on 12 October, a large supply convoy escorted by the entire 16th BrI left Cuito Cuanavale. Although slowed down by ambushes and mines, it reached the stranded task force seven days later: too late for about 100 troops that died of starvation, but still in time to enable the survivors to resume their march back. The safe passage of the convoy in question became possible because the Cubans had meanwhile deployed additional MiG-23MLs to Menongue, and constantly bombed insurgent positions astride its route. Amongst the pilots involved was Eduardo González Sarria, who experienced



Eduardo González-Sarria seen donning his anti-g suit, while preparing for his next combat sortie in Angola. Notable is his folding-stock AK-47 assault rifle laid on the ground in front: this was carried by all Cuban pilots on every flight in the country. (González-Sarria Collection, via Luis Dominguez)

his most memorable mission of the war on the same day that the supply convoy reached the FAPLA troops, on 19 October 1985:

It was the Day 90 of my second tour of duty in Angola and I was tasked with flying a combat air patrol. My MiG-23ML serial C431 was configured with two R-24s and two R-60s, plus a drop



A C.160 Transall from No. 28 Squadron, SAAF. This type proved its worth while flying supplies to airstrips controlled by UNITA closer to the border with South West Africa: most of the places in question were little more than clearings in the bush, bumpy and uneven, and rather outlined than 'illuminated' by improvised means like glass bottles, big cans or fuel drums filled with sand and whatever fuel was available. (SAAF)

tank under the centreline. Around 04.55hrs in the morning, I reached my station over Mavinga at an altitude of 20,000ft. Up there, daylight surrounded me, but down below it was still as dark as by night. To the east, the sun was rising in the colour of a fire. Thus, I could not see what was happening underneath. However, our intelligence reported "intensive traffic" by South African Hercules and Transall transports, which were carrying supplies for the enemy, and I was hoping to catch one of these if it would be late. Tempted by imprudence, immaturity, and... stupidity, I decided to take a closer look at the airstrip of Mavinga. I turned west in order to put some distance between me and the enemy. Twenty kilometres away, I made a 180-degrees turn, and accelerated while descending to an altitude of about 90 metres (300ft). I thought, "if there is an aircraft on the ground, I'll pepper it with cannon." As I approached the airstrip, all of a sudden, dozens, then hundreds, and thousands of flashes filled the sky, as the enemy opened fire at me. All these were bullets and shells passing by very close. And, whenever you see one tracer, there are eight you cannot see... I pushed my throttle into full afterburner and the Machmeter showed 1.1 [1,358km/h; authors' note] in a blink of eye. Still, how I came away unscathed, I do not know. After landing, I had to pee 14 times in the first two hours. That is when I understood one of

principal rules of flying in combat: do not improvise a task once you're airborne. I learned my lesson and thus that mission had been fruitful after all.²⁹

Operation Second Congress thus ended with a clear-cut disaster for the government in Luanda. Altogether, the FAPLA lost 1,550 officers and other ranks killed and 300 missing in action, while a staggering 1,300 were wounded during the push on Mavinga. Moreover, the 3rd, 5th, 8th BrI and the 13th BrDA lost the bulk of their equipment, including 1 PT-76, 25 BRDM-2s and BTR-60s, six BM-14s and BM-21s, nine ZU-23 AAA and ZPU machine guns, and over 100 trucks and other vehicles. The Cubans suffered a loss of 56 killed and 60 wounded, while the Soviets lost at least one killed. The only mitigating point was that all the involved ground units maintained their cohesiveness throughout the battle, no matter what they faced, and that they fought, literally, 'to the last bullet'. Another was the heavy losses that they inflicted upon the FALA: UNITA admitted a loss of 450-500 killed and about 1,500-2,000 wounded in action (both in Cazombo salient and the Mavinga area). However, SADF troops present in Mavinga during Operation Second Congress reported at least indications of much heavier casualties.³⁰

3

Pre-Empting the FAPLA

The defeat of the major FAPLA offensive did not end the South African concerns about the future of UNITA. On the contrary, the SADF concluded that – supposedly 'driven by their Cuban allies' – the Angolans were likely to launch a new offensive on Mavinga in 1986. Correspondingly, they decided to pre-empt such a move by launching and supporting an insurgent attack on Cuito Cuanavale.

Operation Cerberus

A mix of regular- and semi-regular units of the FALA began harassing the FAPLA garrison in Cuito Cuanavale only days after the army's withdrawal from the road to Mavinga. Over the following two weeks, any movement along the road linking the town to Menongue became so dangerous that the FAPLA was left with no option but to launch a new air bridge. To interrupt this operation, the SADF planned Operation Cerberus, within which the two SAAF teams equipped with SA-9s were deployed to Mavinga again and then – protected by elements of the 5th Reconnaissance Regiment, and supported by intelligence and medical teams, and reinforced by a company of the FALA – marched into the vicinity of the road connecting

Menongue and Cuito Cuanavale. Once there, the two SA-9s were emplaced atop nearby hills and waited for their prey. Although the crews of the two SAM vehicles registered about 140 flights by enemy aircraft and helicopters over the next six weeks, none could be engaged. One reason was that most passed by either too high or too far away, or flew through the cloud cover, which disturbed the infrared seeker heads of the SAMs. It was only on 25 November 1985 that an Antonov An-12 finally entered the engagement envelope, as recalled by Koos Stadler, one of the veterans of the 5th Reconnaissance Regiment:

Someone shouted, "Antonov!" – the usual warning for the missile operators to get into action... We looked up. The sky was



The gripstock (top) and the missile of the 9K92M Strela-2M (ASCC/NATO-codename 'SA-7b Grail'). Within FAPLA, the weapon was known as *Flecha*, which is Portuguese for Arrow (or *Strela* in Russian). Introduced to service in the late 1960s, the weapon belonged to the first generation of MANPADs. (SAAB)



A group of South African officers inspecting one of the SA-9 vehicles captured in southern Angola in 1983. Notable atop of the pedestal are the transport containers/launchers for the actual weapon of this system. (SAAB)



During Operation Cerberus, the SADF clandestinely deployed two teams equipped with SA-9s to interdict Angolan, Cuban and Soviet transports underway for Cuito Cuanavale. This was one of the vehicles used. (SADF)

clear, with not a cloud in sight. An An-12 was heading straight towards us.... I fixed my binoculars on the approaching aircraft. The wings had to fit into the 18mm of the instrument's reticle to be within the striking range of the SA-9s. As I started shouting,

kilometres away – where it remained for a week longer before withdrawing to Mavinga without any further engagements.

Nevertheless, the loss of CCCP-11747 was only the first in an entire series of losses the FAPLA and its allies were to suffer over

someone else called out, "It's within range!" ... The missile left the launcher in a cloud of smoke and dust, blasting most of the camouflage off the vehicle. Our eyes were fixed on the smoke-trail of the missile, which seemed to bear way off track and then appeared to explode far behind the aircraft.... "It's a hit!" – the gunner shouted as he climbed out of his vehicle. "It's a hit!" All the while, I tracked the aircraft with my binoculars. Suddenly, it started to veer off course and a thin trail of smoke appeared...after ten or fifteen minutes the plane disappeared behind the treeline, having circled in a wide loop to the north. It was obviously in trouble. Then, as we watched in silence, a massive cloud of smoke appeared above the trees. The aircraft had crashed!

The unfortunate Antonov was the An-12B owned by the Aeroflot, registered as CCCP-11747. All 21 of the crew and passengers on board were killed, including the pilot, Sergey Lukyanov, co-pilot Vladimir Zhurkin, navigator Alexey Nikitin, radio-operator Viktor Osadchuk, flight-technician Vitaly Psheniuk and loadmasters Sergey Grishenkov, Vladimir Shibanov and Sergey Sholmov. Moreover, many of the passengers were Soviet officers of the SMMA, foremost Colonel Evgeniy Kandidatov (chief advisor to the 6th Military Region) and Lieutenant-Colonel Alexander Martynov (chief advisor to the 25th Brl). Nine FAPLA officers were also killed in the shoot-down. Immediately after its success, the South African unit vacated its position, moving about 20

the same zone over the coming days, as a search and rescue attempt for the downed transport was launched. On 3 December 1985, a MiG-23ML covering a pair of Mi-8Ts underway to the crash site was shot down by a FALA-operated SA-7. Its Cuban pilot, Captain Lino Cabrera Viera, ejected safely and was recovered by another helicopter later the same day. On 5 December 1985, two Soviet-flown Mi-17s that approached the crash site flew into an insurgent ambush: one was hit by an RPG-7 and crashed immediately, killing the crew of three, including Major Dmitriy Kutunov, Lieutenant Yury Neverov and flight mechanic Alexander Degtvar. The other helicopter was badly shot up by small-arms fire but managed to return safely to Menongue.²

Operation Abrasion

Although the FALA managed to keep the crucial road between Menongue and Cuito Cuanavale under constant pressure through the use of mines and ambushes, the decision-makers in Pretoria concluded that much more was necessary. Correspondingly, in December 1985, several reconnaissance teams of the SADF were deployed to beef-up the insurgents operating along this axis in the operation codenamed Abrasion. These were soon followed by two troops of Valkiri MRLS each, and a company of the 32nd Battalion, deployed within Operation Alpha Centauri. One of the MRLS troops was to target Menongue and the other Cuito Cuanavale, and both were in position by 8 January 1986.

The first volley of Valkiri rockets was fired against Menongue the same evening – but triggered a quick reaction from the local garrison. Not only did a volley of BM-21s plaster the area nearby but this was followed by a strong detachment of infantry supported by armour, which forced the South Africans into a hurried withdrawal. Things went much better at Cuito Cuanavale, where the other Valkiri team managed to fire several volleys of rockets, indeed even to exhaust its supply, prompting only a weak enemy reaction: D-30

howitzers did fire back, but their shots fell between 1,000 and 2,000 metres away. Nevertheless, the FAPLA garrison assessed its counterbattery fire as ‘effective’, as recalled by Piotr Pavlovich Bondarenko, advisor attached to the 13th BrDA then in Cuito Cuanavale:

The first attack took place at 22.30 that day.... While standing outside, I could see the lights in the sky...being an artilleryman, I determined the range and coordinates with help of a stopwatch



In addition to the troops of the 32nd ‘Buffalo’ Battalion, SADF Valkiri MRLS played a central role during Operation Abrasion. (SADF)



Not to be outdone, the FAPLA units made a massive use of their BM-21s too. This example is seen unleashing a volley from a semi-entrenched position in the bush. (FAPLA)

and compass, and when they attacked again, we opened fire from all our systems. From that night on, they did not attack our positions for six months. We rebuffed their attack that well.³

Actually, assessing their mission as completed, both South African MRLS teams withdrew to Mavinga: however, while still underway there, the first team – which still had the bulk of its ammunition on board – was re-directed to Baixa Longa, to support a company-sized attack of the FALA against the local garrison. While the four MRLS unleashed their volleys undisturbed during the night from 14 to 15 January 1986, the insurgent infantry assault never took place because the involved FALA unit failed to reach its position on time.⁴

Prowling Floggers

Although complicating the FAPLA build-up in the Cuito Cuanavale area, the manoeuvring by small SADF units was far too little to change the overall situation. Moreover, it was undertaken



A still from a Cuban documentary video, showing a MiG-23ML in the process of take-off, while armed with an R-24R semi-active radar homing missile under the left wing. The example fired by González Sarria on 4 April 1986 malfunctioned shortly after launch. The second missile he fired was an infrared homing R-24T: this not only missed its target but also failed to detonate while passing extremely close to it – probably because its proximity fuse was confused by the nearby ground: the C-130 was flying that low. (Tom Cooper Collection)



All through 1985 and 1986, C-130B Hercules transports of No. 28 Squadron flew nocturnal supply sorties for UNITA almost anywhere over Angola along the border to Zambia and all the way to Malanje if necessary. The sheer size of the Angolan airspace, constantly varying routes and timings of the sorties, and their operations at extremely low altitudes made them exceptionally hard to detect, and even harder to track. (SAAF)

far too far away from the 3rd Military Region, where the SMMA and the Angolans were preparing their next offensive, this time with the aim of seizing Lumbala Nguimbo and Munhango, two villages with airstrips used by SAAF transports to deliver supplies for UNITA.

Indeed, these two small airports were now recognised by Angolan and Soviet military intelligence as of crucial importance. So much so that this time the headquarters of the 3rd Military Region took care to request help from the DAA/FAR contingent before the ground offensive began. González Sarria and his pilots thus found themselves flying combat air patrols over south-eastern Angola in attempt to intercept SAAF transports roaming the area almost at will, as recalled by Juan Francisco Alfonso Doval, one of the MiG-23ML pilots:

In late 1985, we were carrying out dozens of intercept sorties over south-eastern Angola. One MiG-23 was on station all the time, from late in the afternoon until early in the morning. We were intensively searching for C-130 Hercules, American-made transports that were supplying UNITA forces all the way up to the Huambo region, north of Cuito Cuanavale.⁵

All such efforts remained fruitless until late in the evening of 4 April 1986, when the Sapfir-23MLA-II radar of the MiG-23ML flown by González Sarria detected a pair of SAAF C-130s, which ‘jinked up’ from their usual very low operational altitude upon releasing a load of supplies for UNITA with parachute-braked pallets. The Cuban squadron commander instantly accelerated and dived to attack:

I flew MiG-23ML serial C409 that night. Around 23.00hrs, my radar picked up two South African C-130s, I dived to about 300 metres altitude while accelerating to 1,100km/h, locked-on and fired. The first R-24R went crazy. I approached to about seven kilometres and fired the R-24T. That missile passed at supersonic speed between the two engines on the left wing, so close that the crew felt the thud from the shockwave. The proximity fuse failed to work, and neither of the fins touched the propellers...

By the time the Cuban turned around to search for his targets again both of the South African transports – the crews of which thought they came under an attack by SAMs, descended to extremely low altitude and disappeared into the darkness.⁶

Operations Lucusse and Victorious June

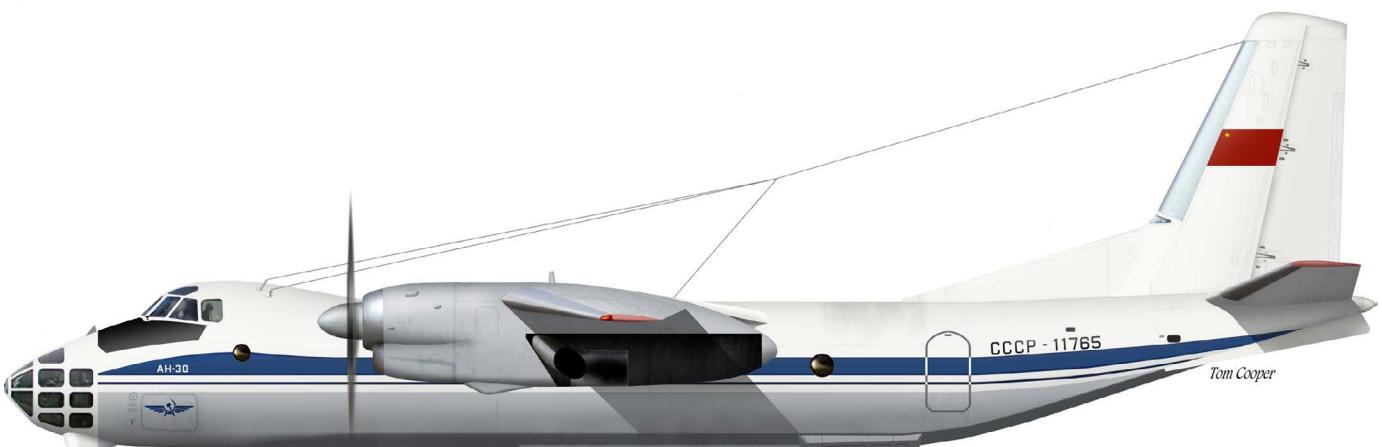
Codenamed Operation Lucusse, the new FAPLA offensive was proceeded by multiple air strikes on all known insurgent bases. In the course of these, the 26th



With the exception of the older turboprop powered Antonov An-22, the biggest transport aircraft deployed by the Soviets to deliver arms to Angola was the four-engined, jet-powered Ilyushin Il-76. The aircraft operated from the USSR to Angola, but was also used to distribute cargo and supplies to bigger airports around the country, usually wearing the markings of the Soviet state-owned airline Aeroflot, like this example. As far as is known, they were never armed – even though most retained their tail-gun barbettes (unlike their crews, who did carry firearms). All had the top halves of their fuselages painted in white, with a thick and thin cheat line down the entire length of the fuselage, and their undersides and their complete wing painted in grey. Front parts of the wing and horizontal stabilators were always left in aluminium colour, while the bottom of the large dome under the nose was in dark grey. (Artwork by Tom Cooper)



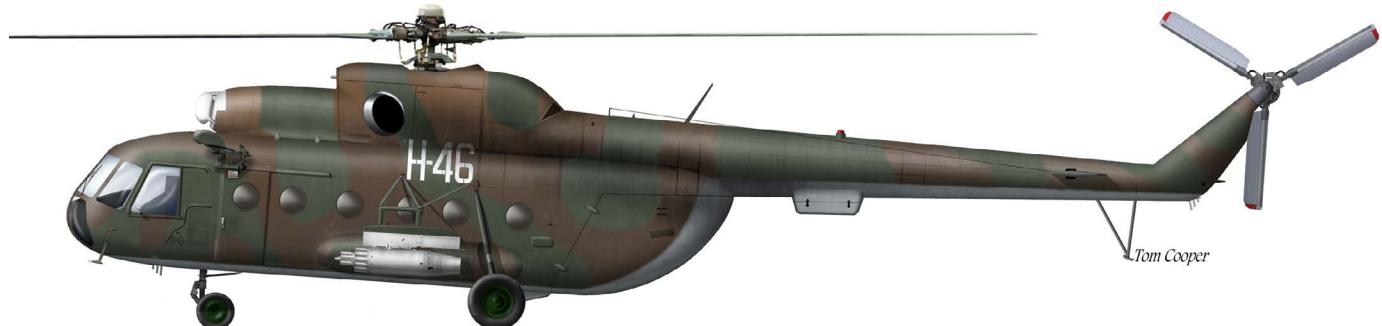
The second most numerous Soviet-owned and operated transport in Angola was the venerable Antonov An-12: up to eight of these four-engined transports were assigned to the Soviet-controlled 7th RATM, home-based at Luanda International. Most of them wore Aeroflot markings, with top halves of the fuselage in white, two blue cheat lines and undersides – as well as wings and horizontal stabilators – in grey. Wingtips were usually in red (rarely in dark yellow), and large five-digit registrations, prefixed by 'CCCP' (for Союз Советских Социалистических Республик, the Cyrillic rendering of the Russian for Union of Soviet Socialist Republics) were always applied on the rear fuselage. Notably, very few wore the Aeroflot crest, but most had the Soviet national flag on the fin. This illustration shows the An-12B CCCP-11747, shot down by a captured SA-9 SAM system operated by the SADF on 25 November 1985, with the loss of the entire crew of seven and numerous passengers. (Artwork by Tom Cooper)



With no photographs available of the sole Soviet-owned Antonov An-30 operated in Angola during 1985–1987, this is the 'best guess' of the appearance of this aircraft. Most likely, it retained its Aeroflot livery, and might have retained the crest of that company, even if having related titles removed. Most likely, the flag of the USSR applied on the fin was still in place, exactly like its registration, CCCP-11765 – because the latter two are both vividly recalled in several Angolan and Cuban accounts. Of course, the purpose of this An-30 was purely military in nature: photo-cartography with the help of computer-supported cameras and other survey equipment, mostly installed in the lower rear fuselage. (Artwork by Tom Cooper)



In December 1975 or January 1976, the Cubans brought four of their own Mil Mi-8Ts to Angola. These were reinforced by four additional examples acquired by Luanda from the USSR in March of 1976. All eight were painted in dark olive green over, and light admiralty grey on undersides, and wore the Angolan tricolore on the fin, and roundels on the rear fuselage. All were armed with up to two UB-16-57 pods for unguided rockets. In 1979, Angola then acquired a total of 28 Mi-8Ts and Mi-8MTs. The first four were taken-up by the Cubans and one of them is shown here, still wearing the same livery as the first eight examples flown by the DAA/FAR contingent. Another example from this batch, serial H-14, was an Mi-8PP, equipped for VIP-transport purposes and used to carry the Angolan president around. Two others were operated by the SMMA, but nothing is known about their appearance. (Artwork by Tom Cooper)



Unlike the earlier Mi-8Ts, Mi-8MTs delivered to Angola starting from 1979 had a camouflage pattern in dark brown atop of their original dark olive green livery. Moreover, they were equipped with a rescue winch installed atop the left front part of the cabin, and sand-filters on engine intakes. Most of these helicopters received serials applied in white in oversized digits atop the centre fuselage. Known examples were H-27, H-30, H-32, H-33, H-38, H-39, H-40, H-42, H-43, H-44, H-45, H-46 (shown here, and shot down on 11 April 1987 with the loss of the entire crew, including its Cuban pilot, Lieutenant Jesus Martinez Santos), H-51, H-53, H-61 and it is possible that the higher ones – applied without sequence – went as high as H-99. More than half were shot down or written off in accidents by 1990. As usual for Cuban-operated Mi-8Ts, Angolan, Cuban and Soviet-operated Mi-8MTs were nearly always armed, usually with a total of four UB-16-57 pods, but sometime with two much larger UB-32-57 pods instead. (Artwork by Tom Cooper)



Starting in 1985, Angola received its first batch of 10 Mil Mi-17 helicopters. Based on the Mi-8MTV, these were more powerful and better equipped, including a heavy machine gun in the nose, armour plating around the cockpit, a hoisting winch, and radar altimeters under the boom. Due to heavy attrition – nearly all were written off by 1990 – there are next to no photographs of them, and the few available illustrations are unclear in regards of a possible camouflage pattern: what is certain is only that they received serials applied in yellow on the boom, in the range H-500 upwards. Known examples were H-512, H-516 (shown here and written off in 1990), H-528, H-532, H-545 and H-547. About 30 additional examples were acquired in the 1988-1990 period but, other than that some of these received serials in the range H-550 upwards, and then H-600 upwards, next to nothing is known about them. (Artwork by Tom Cooper)



Starting in 1984, a squadron each of the 17th RATM at Luanda International, and of the 17th RAH at Huambo AB, was equipped with a total of about a dozen, and then about 30 Mil Mi-25 helicopter gunships. While the Soviet-controlled unit in Luanda primarily served for training purposes, the combined Angolan-Cuban unit in Huambo saw extensive combat deployments and suffered significant losses: at least six are known to have been shot down by 1991 (the example illustrated here, serial H-311, was shot down in March 1991). Surprisingly considering Mi-25s sold to countries with extensive deserts, like Afghanistan, Iraq, or Syria were painted in dark yellow and light green, Angolan Mi-25s were all painted in dark yellow and chocolate brown – even if the first dozen of them had the latter colour applied following the same camouflage pattern as Mi-25s exported elsewhere. (Artwork by Tom Cooper)



The two subsequent batches of Mi-25s delivered to Angola in 1986-1987, wore a slightly different camouflage pattern, even if applied in the same colours as the first batch, and some had their serials applied in yellow instead of black, like H333 shown here. Notably, even if equipped to do so, Angolan Mi-25s next to never carried their AT-2 Swatter anti-tank guided missiles, nor even the launch rails for these: instead, the primary external armament (in addition to the machine gun barbette under the chin) consisted of two UB-32-57 pods for unguided rockets: these were almost always installed on the inboard pylon. Unlike the Mi-8s and Mi-17s, Angolan Mi-25s also received the infrared countermeasures system codenamed 'Hot Brick' by the ASCC/NATO, installed on a pedestal at the rear end of the engine cowling, but all of these types lacked any kind of dispensers for decoy flares before the late 1987. (Artwork by Tom Cooper)



Throughout the 1980s (and ever since), the survivors of six Aérospatiale SE.316B Alouette IIIs found by the Cubans at Luanda IAP in 1975, and 21 Romanian-made IAR.316Bs retained their dark green overall livery, with the top of the boom painted in dayglo orange for easier identification. Serials in the range H-201 to H-230 were applied in black on the boom (shown is the H-232). While three were armed with German-made 20mm MB.151 automatic cannon in the rear cabin, and some testing was undertaken with Soviet-made UB-16-57 pods, most of the time they were operated without any armament at all. Attrition was heavy and by the early 1990s fewer than half of Angolan Alouette IIIs were still operational. (Artwork by Luca Canossa)



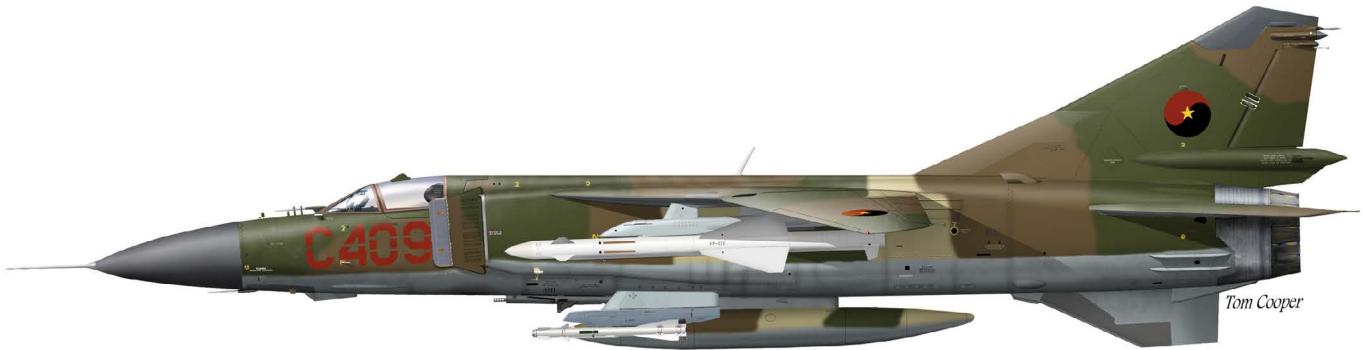
While Angolan sources indicate that the MiG-21MFs delivered by the USSR in early 1976 had serials in the range C41 to C53, photographic evidence shows the serial C53 being worn by one of MiG-21PFMs, originally acquired by Luanda for Mission Olivo, a specialised COIN-asset entirely staffed by the Cubans and established in 1981. Manufactured in the 1960s, these MiGs were overhauled and re-painted in beige (BS381C/388), olive drab (BS381C/298) and black-green on top surfaces and sides, and light admiralty grey (BS381C/697) on undersides before delivery. The Cubans then added the serial number on the nose and the Angolan tricolore on the rudder. By the time they were handed over to the Angolans in 1985 and then photographed, years later, their camouflage patterns were usually worn out into diverse shades of light earth, making them extremely hard to reconstruct. Always used as fighter-bombers, they were usually armed with UB-16-57 pods, or – when deployed during the larger battles in southern Angola in the 1985-1987 period – with bombs like the RBK-250 shown on the underwing pylon here. (Artwork by Tom Cooper)



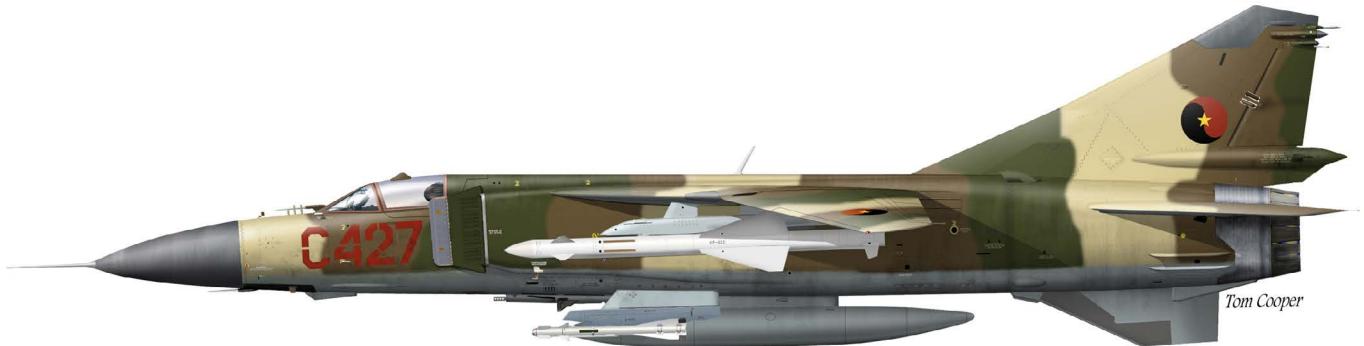
This is a reconstruction of the MiG-21bis C311, based on a photograph showing the front left part of the aircraft following a mishap that took place in 1989 or 1990. This jet belonged to the first batch of this variant delivered to Angola in 1984, and – as clear from the fonts in which its serial was applied, and the application of Angolan national colours on the rudder – was operated by the Cubans as of 1985-1987. In September 1986, C311 became the first fighter jet in Angola to receive – and survive – a hit from an FIM-92A Stinger operated by the FALA. It is shown armed with four UB-16-57 pods for S-5 unguided rockets. Due to the appearance of the Stingers, these were almost completely replaced by different types of bombs from 1986 onwards. (Artwork by Tom Cooper)



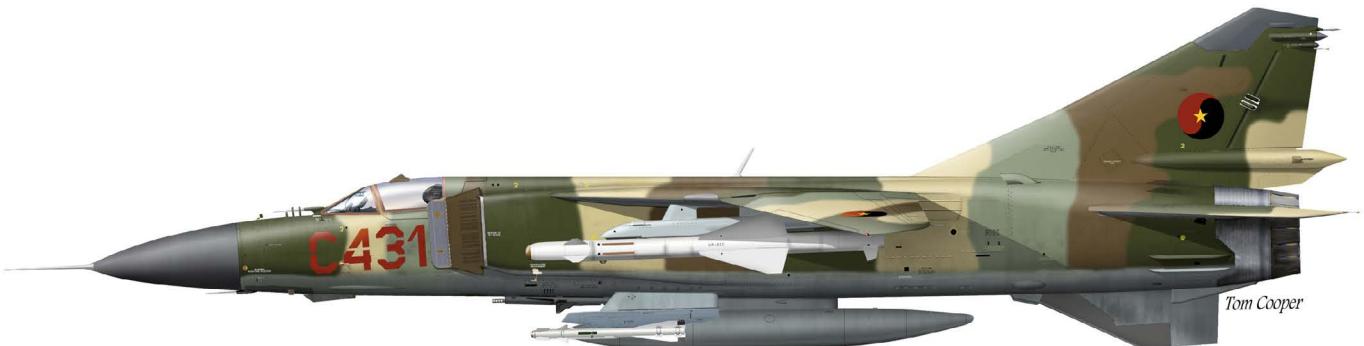
Angolan-operated MiG-21bis-Ks wore the same camouflage pattern as Cuban-operated examples. Sometimes known as 'horns' because of three to five 'horns' applied in olive drab down the centre section of the fuselage, and – 'mirror like' – on top wing surfaces along the same section of the jet. Angolan-flown MiG-21bis had their serials applied in quadratic fonts and wore the new roundel of the FAPA/DAA applied on the fin, right from the start of their service in Angola. They were almost exclusively deployed as fighter-bombers, usually armed with FAB-250M-62 bombs installed on inboard underwing pylons, as shown here. Due to the short range of this type, outboard underwing pylons were nearly always reserved for 400-litre drop tanks. C329 saw only a short career: on 12 August 1985, it was shot down while supporting the opening moves of the southern prong of Operation Second Congress, and its pilot, 2nd Lieutenant António Domingos 'Mingo' was killed. (Artwork by Tom Cooper)



The first batch of 12 MiG-23MLs delivered to Angola received serials in the range C401 to C412 and were assigned to the Cuban-staffed squadron. Their camouflage consisted of beige (BS381C/388), dark brown (BS381C/450), and dark green (BS381C/641) on top surfaces and sides, applied in entirely different patterns on every aircraft. Contrary to the practice introduced on Cuban-operated MiG-21s, they received new Angolan roundels on the fin, top surface of the left wing and bottom surface of the right wing, and serials applied in the same fonts as on Angolan-operated MiG-21bis. This jet, serial C409, was flown by Lieutenant-Colonel González Sarria during the intercept of two SAAF C-130Bs in April 1986. On that occasion the R-24R (shown under the left wing) malfunctioned, while the R-24T narrowly missed one of the targets. (Artwork by Tom Cooper)



The second batch of MiG-23MLs delivered to Angola was assigned to the first unit of the FAPA/DAA operating this type. Nominally marked as C413 to C424, its range of serials actually went up to at least C436, indicating that these were applied without a sequence. Once again, the camouflage pattern – while usually applied in the same three colours (beige, dark brown, and dark green) on top surfaces and sides – differed from aircraft to aircraft. As in the case of the first batch, undersides were always painted in light admiralty grey (BS381C/697). This jet, serial C427, was piloted by 2nd Lieutenant Carlos Manuel Politano on 23 September 1987 when – during a weather reconnaissance flight – he claimed to have shot down a 'South African Puma' helicopter, using a single R-60MK. (Artwork by Tom Cooper)



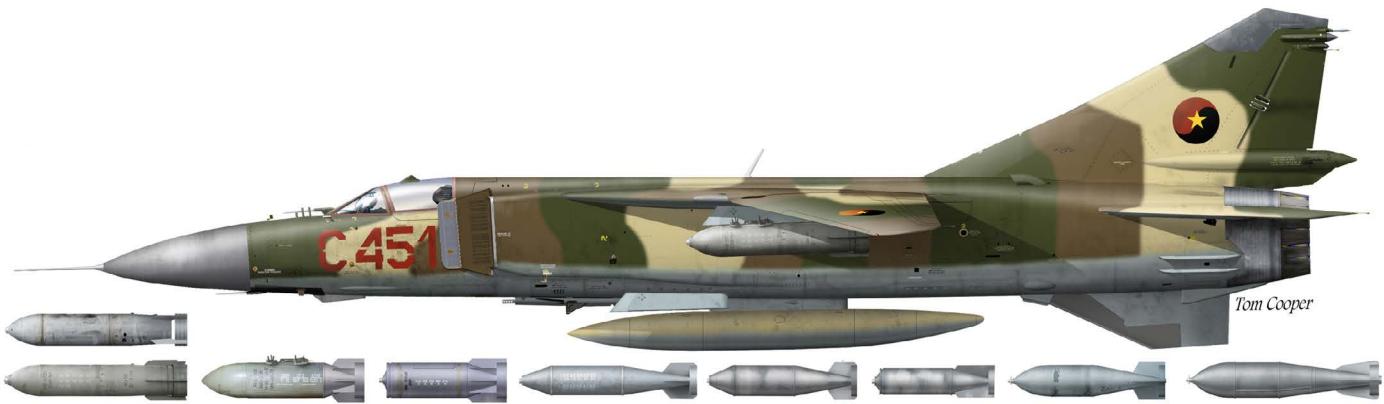
Theoretically, the MiG-23ML C431 was supposed to be assigned to the sole MiG-23 unit of the FAPA/DAA. However, it seems to have been swapped for one of the jets from the first batch operated by the Cubans, and eventually became the favourite mount of Lieutenant-Colonel Eduardo González Sarria, flown by him during his high-speed dash over the heavily defended airstrip at Mavinga on 19 October 1985. Moreover, it was one of the first jets of this type delivered to Angola to have a camouflage pattern consisting of four colours: in addition to beige (BS381C/388), dark brown (BS381C/450), and dark green (BS381C/641), it received at least some grey-green (BS381C/283) on top surfaces and sides, while undersurfaces were painted in the same light admiralty grey as always. This illustration shows it with an R-24T infrared homing missile under the left wing: usually, this was installed under the right wing, but there were always exceptions. (Artwork by Tom Cooper)



Designed as an interceptor with only minimal air-to-ground capability, due to lack of better platforms, MiG-23MLs were soon deployed for flying air-to-ground sorties in Angola. This example, serial C434, was originally assigned to the Angolan squadron, but eventually swapped for one of the first 12 Cuban-flown examples: in turn, the DAA/FAR contingent is known to have deployed it for several strikes using the big 240mm S-24 unguided rockets (called 'rocket-bombs' by Cuban pilots, and shown on inboard underwing pylon), and for testing the Kh-23M (ASCC/NATO-codename 'AS-7 Kerry'; shown inset) radio-command guided air-to-surface missiles during preparations for Operation Orange in 1986. Camouflage-wise, the jet was painted in another combination of beige, dark brown and dark green on upper surfaces and sides, light admiralty grey on undersurfaces, and had its national markings applied in four positions. (Artwork by Tom Cooper)



This is a reconstruction of the MiG-23ML C443 – the jet flown by Major Alberto Ley Rivas during his successful engagement with SAAF Mirage F.1CZs on 27 September 1987. The front and rear section of this illustration are authentic, but, sadly, the centre section (approximately the area around the wing) and the camo pattern on the right side, remain unknown and it is unclear if it carried even the APU-23M1 launch rails for R-24s during that mission. Obviously, C443 was painted in standard Soviet colours for this type (all originally based on the British Standard 381C), including beige, dark brown and dark green on upper surfaces and sides but these were applied in a very unusual pattern consisting of relatively narrow, wavy stripes. Undersurfaces were in light admiralty grey. Ley Rivas deployed one of four R-60MKs installed on underfuselage hardpoints to badly damage Major Piercy's Mirage, and his jet was subsequently decorated with a single red star as a 'kill marking'. (Artwork by Tom Cooper)



Assigned to the Angolan-staffed MiG-23 unit, the jet with serial C451 was heavily utilised for air-to-ground attacks in 1985-1987. The Angolans went to great extents to equip their aircraft with some of the most advanced unguided weaponry of Soviet origin of the time, including (from left to right): OFAB-500ShN and OFAB-500ShL parachute-retarded bombs filled with incendiaries (an OFAB-500ShL is also shown installed on the underwing pylon); RBK-500 CBU (shown in two variants, with and without the ballistic cap, still rare even in Soviet service at the time), three versions of the RBK-250 CBU; and, finally, the FAB-250M-52 and the FAB-500M-62, general purpose high explosive 'slick' bombs. Due to the lack of space under the fuselage, whenever the centreline drop tank was installed, only two such weapons could be carried on underwing hardpoints: the installation of four required the removal of the drop tank, in turn shortening the range. (Artwork by Tom Cooper)



Perhaps the least well-known type in Angolan service was a pair of MiG-21Rs acquired in 1984–1985. Angolan sources stress that they wore the same serial numbers as the first two Sukhoi Su-22s acquired by Luanda – C501 and C502 – and were operated by a flight assigned to the 9th RAC, consisting of specially trained pilots and ground personnel. Other than this, next to nothing is known about their appearance or operations. Based on the sole photograph available (showing only the centre section of the aircraft) this reconstruction is based upon the conclusion that they were delivered around the same time as a slightly larger batch of MiG-21Rs for Ethiopia, and thus probably wore the same or a similar camouflage pattern. If so, the latter consisted of light stone (BS381C/361) or middle stone (BS381C/362) and dark brown (BS381C/411) on upper surfaces and sides, and light admiralty grey (BS381C/697) on undersides. The aircraft is shown with the 'D-Type' pod for reconnaissance cameras under the centreline. (Artwork by Tom Cooper)

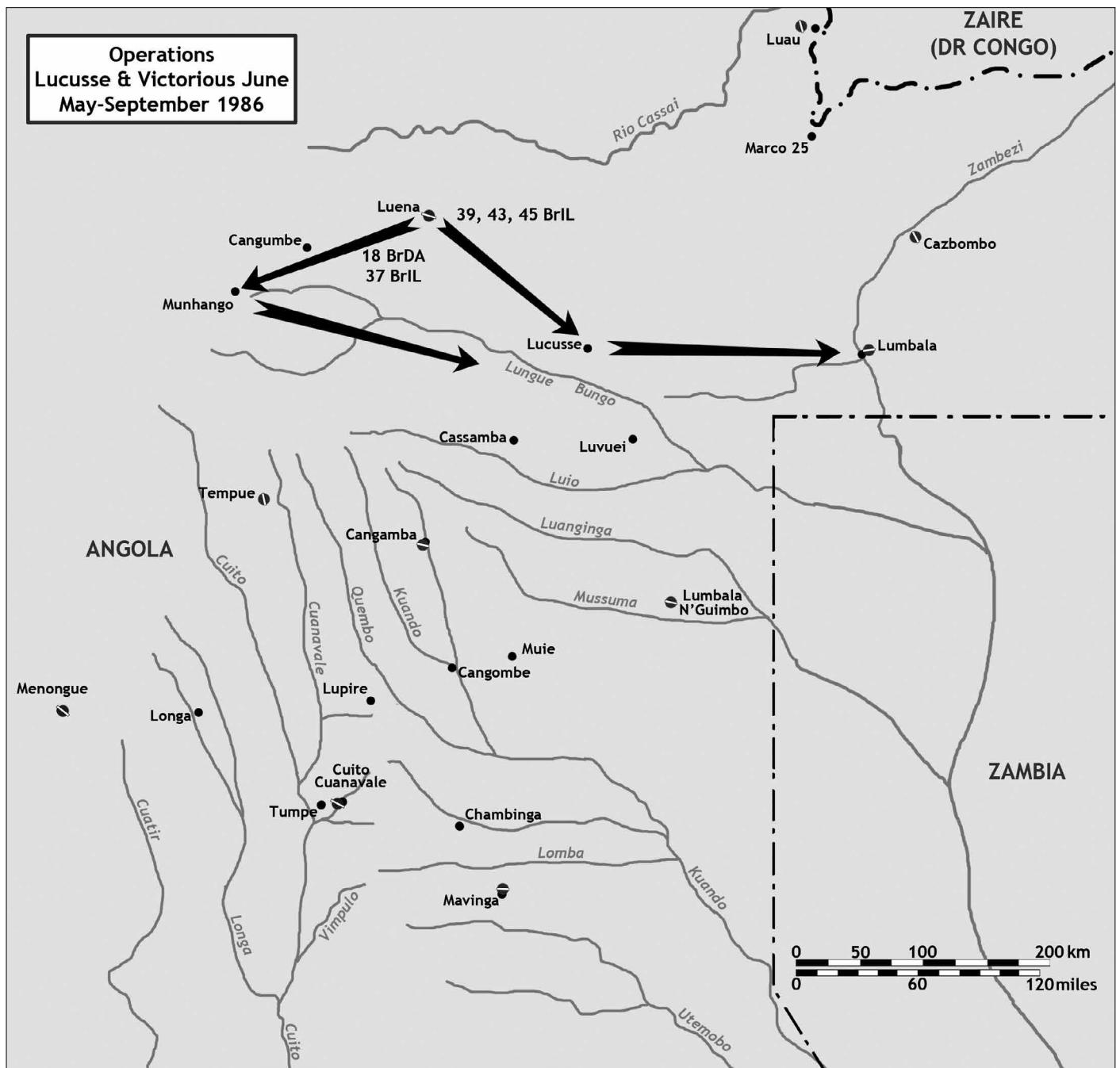


Recently-taken photographs of the few surviving aircraft of this type that can be still found (all in 'abandoned for years' condition) at Namibe and Catumbela, show that what are generally reported as 'Su-22s' by almost all available sources – and officially designated 'Su-22M-4' by the FAPA/DAA – were either Su-17Ms from the 85th production batch (including four hardpoints under the centreline and compatibility with KKR-1 reconnaissance pods), or an unusual 'mix' consisting of Su-17-airframes with the taller fin from the Su-22 series. Sadly, none of the photographs shows the rear fuselage section, so to enable useful conclusions about their engines. The camouflage pattern was in light stone (BS381C/361) and light olive green on upper surfaces and sides, and light admiralty grey (BS381C/697) on undersides (drop tanks were in beige overall), and serials in the range C501 to C510. This aircraft is shown armed with a total of six RBK-500 CBUs – a weapon that proved murderously effective against FALA's infantry – each equipped with an aerodynamic cap to lessen drag. (Artwork by Tom Cooper)



To bolster the Angolan Navy, during the 1980s the Soviets not only deployed the 30th Operational Squadron of their navy to Luanda, including three permanently attached ships, but regularly flew Tupolev Tu-95RT long-range maritime patrol aircraft of the Soviet Naval Aviation from Severomorsk on the Kola Peninsula, all the way down the North Atlantic, with a refuelling stop in Havana, and down the South Atlantic to Luanda. According to Russian sources, once in Angola, the aircraft were assigned to the command of the 30th Operational Squadron; according to the Angolans, they were actually assigned to the 7th RATM, which was controlled by the SMMA. As well as patrolling the Angolan coast, during the Falklands/Malvinas War of 1982, they also flew missions well to the west, sometimes shadowing the Royal Navy's Task Force. As usual for the period, all the Tu-95RTs were left in bare metal overall – a colour which actually consisted of two layers of clear lacquer, mixed with 10 percent and 5 percent aluminium powder. Other than national insignia, they wore a bare minimum of other markings, including their two-digit bort numbers, and – as shown here – some had the sign of 'excellence' applied in red on the forward fuselage. (Artwork by Tom Cooper)





Map of operations Lucusse and Victorious June, conducted from May into September 1986. (Map by Tom Cooper)

RACB suffered its first combat loss when the Su-22 piloted by Lieutenant António Manuel Cabral de Sousa 'Rex' – who only recently converted from MiG-21s and was still new to the type – was shot down near Lucusse on 14 April 1986. Experiencing much less luck than after his first ejection, de Sousa was captured by insurgents.⁸

The offensive was then launched in late May 1986, with one FAPLA task force moving from Luena against Munhango, and the other from Luena against Lumbala. Once again, the insurgency proved unable to stop or even seriously disrupt the movement of heavily armed conventional troops: by early June, the second FAPLA column reached Cangumbe. Once in Munhango and Lucusse, in mid-June both Angolan columns stopped to rest, regroup and establish forward supply bases. They resumed their advance only in early September 1986, in the Operation codenamed Victorious June that was again conducted with two prongs: 18th BrDA and 37th BrIL moved from Munhango in an

eastern direction; 39th, 43rd and 45th BrILs moved from Lucusse in the direction of Lumbala.

All the brigades included strong detachments of ZSU-23-4 Shilka self-propelled AAA and ZU-23 towed AAA, which were not only highly effective against low-flying aircraft but could be deployed to devastating effect against ground targets. Moreover, the FAPA/DAA meanwhile received support of a single, Soviet-operated Antonov An-30 aircraft (ASCC/NATO-codename 'Clank') – a variant of the An-24 family modified through the installation of precise navigation equipment and computer-supported cameras for photo-mapping – for reconnaissance ahead of its fighter-bombers, and an An-26 as an airborne command post. The two aircraft enabled the MiG-21s and MiG-23s to strike detected FALA bases and positions at shorter notice and in much more precise fashion. The great distance to the border with South West Africa and the strong presence of air defences also enabled much activity of FAPA/DAA helicopters, without the fear of interception by the SAAF. For example, when the 39th

Nothing but Trouble: R-24 Air-to-Air Missile⁷

The R-24 could be considered an ‘evolution’, or at least a ‘refinement’ of the original R-23 air-to-air missile. The development of the later was launched by the Vympel Design Bureau in 1961 – two full years before the GenStab made the decision to launch the development of the MiG-23. Eventually, the R-23 and the radar necessary for its guidance – the future Saphir-23 – became the centrepiece of the K-23 weapons system, the very centrepiece of interceptor variants of the MiG-23. With the Soviets lacking the necessary microtechnology, the idea quickly proved overambitious: finding no way to work themselves around the problem, they first had to find a way to design and manufacture flat micromodules. Unsurprisingly, the progress remained slow even once the chief-designer of the R-23 suffered a heart attack and the entire project was reorganised in 1963. Indeed, and just like the MiG-23, the K-23 continued suffering delays and was not ready even by 1967. Instead of cancelling an obvious failure, the Politburo and the GenStab fired several chief designers and repeatedly reorganised the design bureaus: nothing worked though, and thus the GenStab eventually pressed the MiG-23 into serial production ‘as it was’, without the K-23, in 1970 – knowing all too well that even the aircraft design was still immature and in need of years of additional development. The first operational Saphir-23, and the first R-23 missiles became available only years later. The R-23 entered serial production in 1973, and then in two variants:

- *Izdeliye-340* (Product-340), a ‘radical’ development of the original idea, in the form of a semi-active radar homing version, designated R-23R, from 1974 (ASCC/NATO-codename ‘AA-7A Apex’); and
- *Izdeliye-360* (Product-360), in the form of a passive, infrared homing version, designated R-23T and equipped with the TGS-23 seeker head cooled by liquid nitrogen (ASCC/NATO-codename ‘AA-7B Apex’).

In 1974, on service entry, the R-23 was the first Soviet-made air-to-air missile capable of engaging targets flying lower than the interceptor firing it (or, in the ‘look-down/shoot-down mode’, to use the Western military vocabulary). However, by then the entire K-23 weapons system was excessively complex, heavy and mechanically unreliable. Indeed, instead of carrying four R-23s, as originally intended, the MiG-23M – the first fully equipped variant to enter production – could carry only two. Moreover, not only test-firings at home, but also experience from local wars in the Middle East and South East Asia forced the GenStab to order the addition of much lighter, yet more manoeuvrable air-to-air missiles – in the form of R-60 – to the MiG-23. Finally, recognising that the R-23R had much too narrow an engagement envelope for combat against manoeuvring targets, in 1975 the GenStab issued the order for the development of an advanced derivative as the centrepiece of the new K-24 weapons system, i.e. the primary armament for the ‘ultimate’ MiG-23ML variant. The resulting *Izdeliye-140* – designated the R-24R in operational service (ASCC/NATO-codename ‘AA-7C Apex’) – received an entirely new RGS-24 seeker head, a more powerful motor, new fuse, and a re-designed wing and entered service in 1981. It was followed by its ‘thermal’ variant (in Russian military vocabulary: infrared homing in the West), the *Izdeliye-160*, which received the improved TGS-23T4 seeker head, and was designated the R-24T in operational service (ASCC/NATO-codename ‘AA-7D Apex’).

Contrary to the development of the R-23, the fast progress of the R-24 was a major achievement – even more so considering that only a few years later the weapon was in operational service in Angola. Unsurprisingly, the Soviets were particularly proud and expected the R-24 to help the FAPA/DAA secure aerial dominance over the SAAF. However, the Cuban ‘mavericks’ were never as complacent. On the contrary, not only the fact that the weapon was still brand new, but especially González Sarria’s report that his R-24R ‘went wild’ upon firing at such a steady target as a C-130, and that the R-24T failed to detonate, prompted them into a painstaking inspection of the entire

BrIL ran into a major ambush that caused it several fatalities and over 120 wounded on 1 August 1986, all of these were evacuated by a detachment of three Angolan-crewed Mi-25s and four Mi-17s without a single loss in the process. Facing such an onslaught, Savimbi once again requested help from Pretoria and true to form on 14 September 1986, the SAAF C-130s flew in a team equipped with Valkiri MRLS.⁹

Thorn in the Side

If all the ‘clandestine’ involvement of the SADF was not problem enough for Angola, in September 1986 a new and unexpected threat made its first appearance. In the wake of President Ronald Reagan’s decision to provide ‘non-lethal military equipment’ worth US\$15 million to UNITA, the first batch of 50 General Dynamics FIM-92A Stinger MANPADs was delivered via South Africa to Jamba. Over the following three years, 160 additional missiles – and an unknown number of grip-stocks and other equipment necessary for their combat deployment – were to follow. Although by far not as effective as often claimed in the West, the Stinger was to prove

an exceptionally unpleasant surprise. As well as being faster and longer-ranged than the venerable, Soviet-made SA-7 operated by the FALA’s ‘anti-aircraft batteries’ (commanded by Colonel Jóao Cristiano ‘Susula’) for years, the FIM-92A was equipped with a very advanced, Argon-cooled seeker head, with a much wider engagement envelope: this was sensitive enough to track even aircraft approaching it, not only the hot exhaust gases of the aircraft distancing from it. Moreover, the seeker head was programmed to guide the missile into the side of the target, so as to hit either one of its integral fuel tanks or one of the drop tanks (if the latter were carried), which – even if the FIM-92A was equipped with a contact fuse – significantly increased its lethality. While the SA-7 tended to detonate behind the target (usually inside the hot exhaust plume), the guidance and delayed fuse of the Stinger caused it to detonate ‘inside’ the targeted aircraft, significantly increasing the damage caused, although the warhead contained only 310 grams (0.69lbs) of Hexogen explosive. If the missile missed, it was programmed to self-destruct after 17 seconds of flight.

stock in Angola. This quickly revealed that the missile might have been excellent, but that it suffered from a number of, apparently, ‘unexpected’ issues – most of which were, ironically, almost the same as those experienced by Americans with their AIM-7 Sparrow during the Vietnam War, back in the late 1960s. Generally, the Soviet armament was famous for its reputation of ‘being built as strong as a tank’, and – especially in comparison to Western weapons – as ‘unbreakable’, no matter how (mis) handled: thus, much too little attention was paid to the storage and handling of missiles. However, the R-24 was neither one of the T-54/55-family of MBTs, and even less so an AK-47 assault rifle. It was full of highly sensitive electronics. Unsurprisingly, most of the missiles were damaged while re-loaded to trolleys for transport from the ammunition depot to aircraft hardstands – made worse because they were usually transported along roads and taxiways with ‘rather rough’ surfaces. Moreover, Cuban – and therefore Angolan – armament specialists tended

to load them ‘by the power of muscles’, manually, without the help of any forklifts or hoists: whatever had survived the prior transportation, was frequently broken by the time the missile was finally installed on the APU-23M1 launch rail of the MiG-23ML. As a consequence, next to no R-24s would work as expected when fired in combat.

With there being no way to replace the entire stocks, the Cubans had their armament specialists repair whatever R-24s they could. Meanwhile, their pilots sought different solutions: flight testing eventually revealed that a MiG-23ML equipped with just four R-60s – and no R-24s or centreline fuel tank – could remain on station as long as one carrying the standard configuration of two R-24s and two R-60s. Correspondingly, from around late 1986, whenever sent on a combat air patrol or to provide top cover, the leader of each pair flew a jet armed to standard configuration of ‘two each’, while his wingman flew a jet armed with four R-60s.

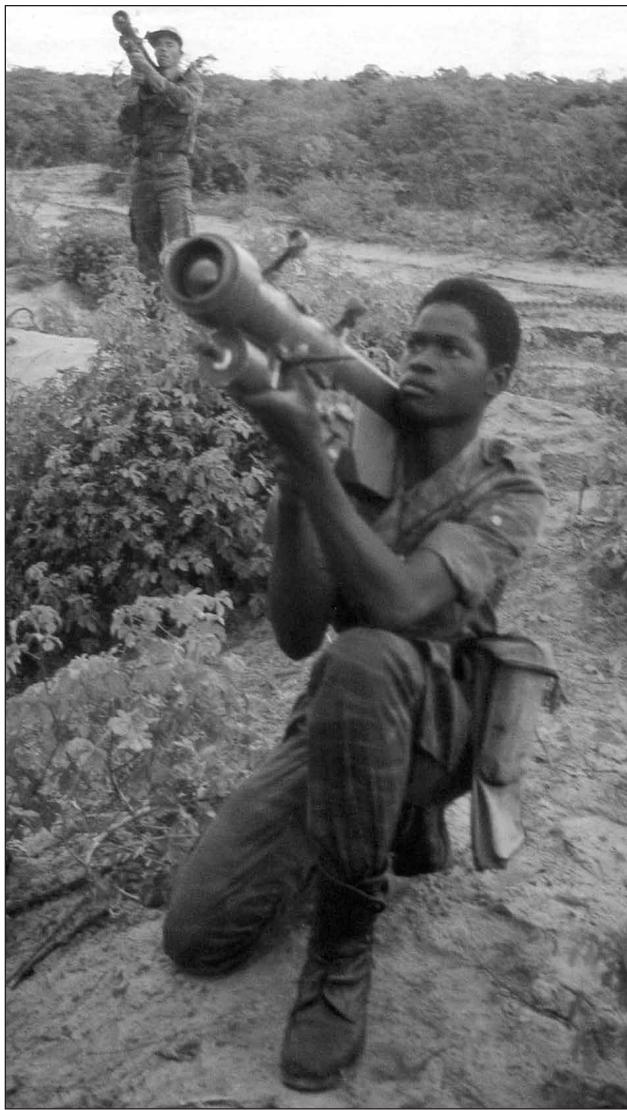


Cuban ground crew in the process of installing a 210-kilogram R-24R missile under the left wing of a MiG-23ML at Menongue AB. Their smiles demonstrate their enthusiasm, despite hard and physically demanding work under primitive conditions. Moreover, their enthusiasm ruined quite a number of R-24s: combined with poor reliability of the Saphir-23ML-III radar – which tended to ‘freeze’ whenever the pilot locked-on a target – this cost Cuban MiG-23 pilots quite a number of ‘almost certain’ aerial victories. (Verde Olivo)

The FALA took several months to train its teams in the use of the new weapon, and these then took several months to reach the battlefield. By accident, it was a group of Cuban pilots deployed at Luena AB in support of the FAPLA offensives on Munhangó and Lumbala as of August-September 1986, that first experienced the new and powerful MANPAD now operated by the insurgents. On 2 September 1986, Captain Luís Hernández Breñas and 1st Lieutenant Pedro Pol flew a pair of MiG-21bis armed with UB-16-57 pods for 57mm S-5 unguided rockets. As formation leader, Breñas dived first, fired his rockets and climbed back to altitude without problems. Pol, who monitored his action from above, so as to be able to warn the leader about possible threats, then followed into his attack. However, during the dive, his jet suddenly took a severe hit that ripped off the complete horizontal stabiliser of his MiG-21bis serial C311. By this time, DAA/FAR fighter-bomber pilots deployed in Angola were undergoing much more comprehensive training before being sent into combat than had been the case with their colleagues earlier, and Pol thus managed to fly his badly damaged jet for a safe landing back in

Luena. However, it was only the first sign of the emerging trouble. More than a week later, on 11 September 1986, another pair of Cuban-flown MiG-21s was in the process of attacking insurgent positions, when the aircraft with serial number C315 received a hit to the top of the windshield and, to the pilot’s surprise, from a missile that approached from the front. To the Cuban’s luck, the projectile failed to detonate and bounced harmlessly away, causing ‘only’ a crack in the plexiglass: the pilot managed to pull up in time and fly the slightly damaged jet safely back to Luena AB. However, the writing was now on the wall.¹⁰

Meanwhile, the DAA/FAR contingent had reinforced the MiG-21 unit at Luena AB with a detachment of MiG-23MLs, and these went into action. On 13 September 1986, during an attack on insurgents in the Lumbala Nguimbo area, the MiG-23ML piloted by Captain José Alberto García Flores received a severe hit from a MANPAD: as the pilot attempted to climb back to altitude, the aircraft caught fire and flipped out of control. García Flores was left without choice but to eject. A search and rescue team was scrambled on board a Cuban-flown Mi-8, escorted by two



SA-7 operators of one of FALA's 'anti-aircraft batteries'. Starting in 1986, they were re-equipped with the much more advanced FIM-92A Stingers of US origin. (Al J Venter)



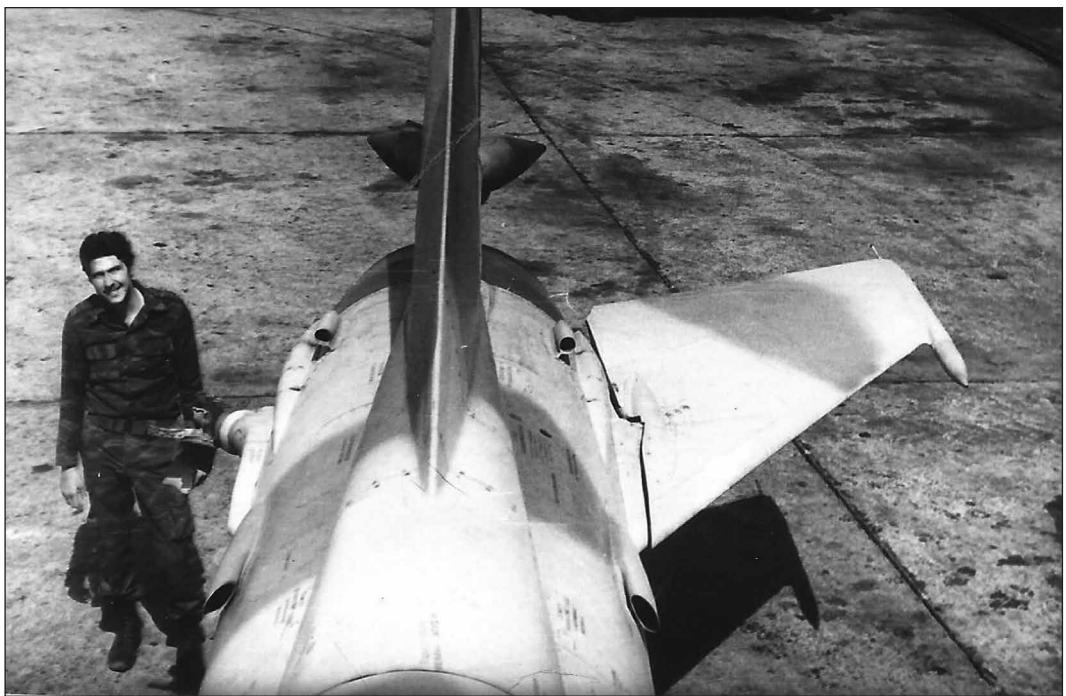
Unknown pilot of the DAA/FAR pointing at the top of the windshield of the MiG-21bis C315 hit by a Stinger on 11 September 1986. (via Fidel Vargas)



1st Lieutenant Pol (left) and Captain Hernández Breñas next to the fin of the MiG-21bis C311 after their encounter with the Stinger on 2 September 1986. (via Fidel Vargas)

Mi-25s and a pair of MiG-23s only some 20 minutes later, and this was quickly on the scene of the crash. Slightly later, Garcia Flores's parachute was discovered and the Mi-8 landed nearby to disgorge special forces operators. The dead body of the ill-fated MiG-23 pilot was found: Garcia Flores died during ejection when the strap of the folding-stock AK-47 he was carrying (as all Cuban pilots did in Angola) wrapped around his neck due to the force of the rocket-assisted ejection.¹¹

This first combat loss of a MiG-23ML caused a profound shock within the ranks of the Angolan and Cuban pilots, even more so because it was followed by a loss of an Angolan Mi-17, a



Piedro Pol with the rear section of his MiG-21bis: notably, the missile took away the right horizontal stabiliser, but did not detonate and spray the fuselage with shrapnel. The aircraft thus remained controllable, enabling the pilot to land safely. (via Fidel Vargas)

few days later, when 2nd Lieutenant Manuel Fernandes Valente and his entire crew were killed. While the DAA/FAR contingent temporarily stopped its combat operations to assess the situation and consider possible solutions, lacking any kind of effective countermeasures, the Angolans all but ceased flying and releasing their weaponry below altitudes of 2,000 metres (6,562ft), in order to avoid entering the engagement envelope of the new MANPAD. The immediate consequence was that the precision and effectiveness of close air support provided to the ground troops dropped dramatically. Another was that, with the air threat *de-facto* out of their way, the South Africans were free to operate their MRLS with improved efficiency, and thus the FALA was able to grind down both of FAPLA's advances. On 1 November 1986, the HQ 3rd Military Region ordered all of the involved units back to their starting positions.¹²

battery each of SADF Valkiri MRLS and brand new 155mm G-5 long-range guns.¹³

As usual, the resulting operation – Alpha Centauri – began with a major logistic effort: SAAF transports not only flew in 1,800 155mm shells and 2,300 127mm rockets but also supplies for the two SADF units, and then helped restock FALA ammunition. Meanwhile, the two SADF batteries drove into southern Angola, while insurgent units began deploying into attack positions. The intelligence provided to their commanders indicated that the defences of Cuito Cuanavale were significantly weakened: the local garrison originally consisted of two brigades, but the 8th BrI was redeployed about 20 kilometres further east in March 1986, leaving the town protected only by the 13th BrDA and the 25th BrI. The South Africans planned for the insurgents to assault in two prongs: the first was a deception manoeuvre, aimed to distract the defenders and expose them to both SADF artillery and a flanking

attack of the second FALA brigade. The Angolans seem to have got wind of the South African appearance, because they reinforced their air strikes by 14 August 1986. However, these were ineffective, and one MiG-21bis, flown by Francisco Matamba 'Kico', was shot down and the pilot captured by insurgents.

Correspondingly, the SADF was left free to bring all the involved units into their starting positions, and at 17.30hrs the same day, the G-5 battery opened fire at the Angolan base as the FAPLA troops were queuing in front of their canteens. The



A G-5 howitzer of the SADF in action, deep in the bush of southern Angola. (SADF)

barrage continued well into the night, but was interrupted in the morning, as the South African artillerymen had to hide during the daylight because of another series of Angolan air strikes. In turn, the BM-21s and D-30 howitzers of the FAPLA failed to return effective counterbattery fire, even if they did manage to bracket a detachment of 32nd Battalion with a combination of shells and rockets. Eventually, after three nights of G-5s pouring fire into Cuito Cuanavale, the local military bases and the air base were devastated: by then all the aircraft and helicopters had been safely flown out, but the 13th BrDA and the 25th BrI were down to only one operational BTR-60 APC. The FALA launched its assault after sunset of 15 August, but with only one of its two brigades: the other had failed to reach its departure position on time. Initially, the insurgents almost reached the crucial bridge over the Cuanavale River, but the garrison – this time supported by its Soviet advisors, and the sole operational BTR-60 – counterattacked and saved the day. Sergey Petrovich Demidchik, who served as interpreter with the SMMA's team assigned to the FAPLA headquarters in Cuito Cuanavale, recalled:

As soon as we reached the bridge, the armoured personnel carrier came under fire. But, with it there, we could hold the

bridge. I will never forget the situation: it was the most terrible thing I had experienced in my life, being attacked from both sides, and with bullets whizzing all around me. Screams and shouts, even worse than a bomber's noise. The enemy broke into the position where our BM-21 vehicles were entrenched. They even took these under direct fire. The awful thing was that it was not clear who was killing whom: they all looked alike, both FAPLA and UNITA had practically the same uniform. Somehow, we managed to hold the position, and at dawn the enemy retreated....Everything was in ruins. Aircraft could not land as the airstrip was cratered, and it was practically impossible to leave our encampment.¹⁴

With its assault repelled, the FALA was left without choice but to withdraw. The two SADF batteries followed in its wake on 17 August 1986, thus concluding Operation Alpha Centauri with mixed results: the attempt to seize Cuito Cuanavale had failed but the devastating bombardment by G-5s made sure that any large-scale offensive by the FAPLA against UNITA's heartland would be impossible for months to come.¹⁵

4

Shadow Warfare

While the combination of constant pressure from the FALA insurgents on the road linking Menongue and Cuito Cuanavale, followed by two SADF raids, and then the devastating shelling of Cuito Cuanavale made sure that the FAPLA had given up on the idea of staging another offensive against Mavinga in the immediate future, Pretoria still took no chances, and staged another major

blow – this time in the form of culminating a clandestine campaign already initiated years beforehand.

Two Unequal Opponents

As of 1985, the South African Navy was equipped with three Daphné-class submarines acquired from France: SAS *Maria van Riebeeck*, SAS *Emily Hobhouse* and SAS *Johanna van der Merwe*

were all commissioned into service between 1971 and 1972. In 1974, Pretoria then ordered six Reshev-class fast missile boats from Israel: SAS *Jan Smuts*, SAS *P. W. Botha*, and SAS *Frederic Creswell* were constructed in Haifa and delivered by sea in 1977, while SAS *Jim Fouché*, SAS *Frans Erasmus* and SAS *Oswald Pirow*, were constructed under licence by the Sandock Austral shipyards in Durban. About 58 metres long and displacing mere 450 tonnes, these ships were small but packed lots of firepower, including six Gabriel anti-ship missiles, two 76mm OTO-Melara guns, two 20mm guns and four 12.7mm heavy machine guns. Crucially, they had a range of



Illustrating the severity of FAPA/DAA losses of 1985-1987, this photograph taken during the training in the USSR shows a group of Angolan MiG-21 pilots, including (standing from left to right), Dilceu (KIA), Matamba Rui (KIA), Cabral de Sousa (KIA), Amerio, Etienne, Cassiano; and (kneeling, from left to right), Vita (KIA), Firmino (KIA), Tola (KIA), and unknown. Some – like António Manuel Cabral de Sousa – are known to have been shot down twice. (FAPLA)



A view of the main base of the MGPA in Luanda in the late 1980s. Notable in the centre left (with their rear half of the hull painted in black) are two Project-206 Shtorm-class torpedo boats: together with Project-205U fast missile boats, they formed the backbone of the Angolan Navy. (via Mark Lepko)



Although of – potentially – crucial importance for the security of the Angolan coast, the procurement of two Fokker F.27s for the FAPA/DAA was cancelled because of their high cost. Instead, only this single example was acquired with its full mission equipment. (Albert Grandolini Collection)

3,600 nautical miles at an optimum speed of 16-18 knots, and could be supported by two fast supply ships, SAS *Tafelberg* and SAS *Protea*, which could further stretch their range. Finally, in 1981, the 4th Reconnaissance Regiment – a unit custom-tailored for naval special operations – was fully operational. By the 1980s, the South African Navy was thus in the perfect position to run

discrete operations over long ranges, almost anywhere along the coast of western or eastern Africa.¹

Unsurprisingly, the South African Navy began using its submarines and fast missile craft to deploy teams from the 4th Reconnaissance Regiment for raids against selected targets along the coasts of Angola and Mozambique: to keep these deniable, all were claimed as undertaken by the local allies of South Africa, such as UNITA.

In comparison, the tiny People's Navy of Angola (Marinha de Guerra Popular de Angola, MGPA) was not only ill-equipped and trained, but virtually unable to prevent, or even impede South African operations – and the condition and equipment of the FAPA/DAA was also sorely lacking

in this regard. Officially established on 10 July 1976, the MGPA was raised around a core of MPLA militants that received some naval training in the USSR in 1969-1970, and then another group of volunteers trained by the Cubans starting in 1976. The force eventually operated a motley collection of 12 patrol vessels, small landing ships and speedboats, mostly leftovers from the Portuguese. At least a modicum of combat capability was obtained



While pressed into service with the serial R-301, the sole F.27-200 Maritime was hopelessly too little for preventing South African naval commandos from attacking selected port facilities almost at will – even more so because the Angolan air force lacked knowledge of maritime operations. (Albert Grandolini Collection)

only in 1977, when the first five Project-206 Shtorm-class torpedo boats (ASCC/NATO-codename ‘Shershen’) were acquired from the USSR. Only six years later were these followed by six Project-205U (ASCC/NATO-codename ‘Osa’) fast missile boats. Both the Project-206 and Project-205U were vastly inferior in capability to the fast missile craft operated by the South African Navy: designed for hit-and-run style attacks on major enemy combatants, they were designed as ‘point-defence interceptors’, and lacked endurance. Although having a higher maximum speed than Reshefs, they also lacked the weaponry comparable to that of the Israeli-made boats:

- Shershen-class were armed with four obsolete Type 53 torpedoes with a range of only 3.7km (2.3 miles), two AK-230 twin 30mm guns, and a quad launcher for 9K32 Strela-2 MANPADS (ASCC/NATO-codename ‘SA-N-5 Grail’)
- In addition to two AK-230 twin guns guns and a quad launcher for MANPADs, the Osa-class carried four P-15 Termit anti-ship missiles (ASCC/NATO-codename ‘SS-N-2 Styx’), but these were big and heavy weapons flying high and slow, thus easy to detect, evade, or even shoot down with air defences (for comparison, Gabriel anti-ship missiles were ‘sea-skimmers’, flying very low over the sea surface and thus hard to detect, intercept or evade).

Although reinforced by three Poloncny-class amphibious warfare vessels and two Project-1258 minesweepers by 1985, and then growing to a total of 2,700 officers and other ranks organised into two brigades by 1988 (one controlling the missile boats and amphibious warfare vessels, the other the torpedo boats and patrol vessels), the MGPA remained a small, much ignored arm with an entirely defensive posture, ill-positioned even to detect any kind of a naval attack on the Angolan coast in time. Things did not get better when, as described in Volume 3, the order for two advanced Fokker F.27-200 Maritime patrol aircraft for the FAPA/DAA was nearly cancelled because of their high cost: only one was ever delivered in its intended configuration, while the other

was acquired as a ‘vanilla’ transport. Moreover, the crew of the sole F.27-200 was primarily tasked with patrolling the vulnerable offshore oilfields near the Cabinda Enclave.

30th Operational Squadron, Soviet Navy

While the Angolan Navy gradually developed naval facilities – with their own communication network, and supported by radars – in Soyo, Lobito and Namibe, it was in such a vulnerable position that the Soviets eventually decided to deploy the 30th Operational Squadron of their navy to Luanda. This had three permanently attached ships. Furthermore, Tupolev Tu-95RT long-range maritime patrol aircraft made regular overflights from the North Atlantic via Cuba all the way to Luanda. The aircraft and warships were as busy with tracking the movements of carrier battle groups of the US Navy as with support for flotillas of Soviet fishing ships active in the South Atlantic and thus, overall, the 30th Operational Squadron proved as unable to dissuade the South African forays along the Angolan coast, as the MGPA did.² Typically, Soviet officers and other ranks were convinced of something entirely different, as recalled by General Valery Belyaev:

This squadron, by the very fact of its presence, was restraining the South African aggression against Angola. Besides, we had a powerful communication centre that at any time of the day was allowing us to contact any point on the globe, be it Soviet embassies, consulates, or contingents of the Soviet armed forces. Tu-95RT reconnaissance aircraft of the Soviet Navy were allowed to land in Luanda. Flying from Severomorsk on the Kola Peninsula in the Soviet north, to Havana, and then to Luanda and back, they were “giving the full picture” of the situation in the Atlantic.³

Plausible Deniability

Actually, the Soviets had as little clue about South African capabilities and intentions, and even less about their operations, as the MGPA. The first South African raid into the Angolan waters took place in May 1979, when on three submarines infiltrated



A Tu-95RT parked at Luanda International, around 1984. These giant turboprop maritime reconnaissance aircraft made regular overflights all the way from Severomorsk on the Kola Peninsula, down the North Atlantic and, after a refuelling stop in Havana, all the way to Luanda. (Albert Grandolini Collection)

Namibe harbour for reconnaissance purposes. In August 1980, a reconnaissance team successfully blew up a farm of fuel tanks in Lobito in the course of Operation Amazon, and in November 1981, elements of the 1st and 4th Reconnaissance Regiment blew up 17 oil tanks of the Petrangol Refinery in Luanda in Operation Kerslig. Obviously, the Angolan petrochemical industry was the primary target of South African naval operations, and thus its protection was significantly bolstered over the years. However, the roads and railroads linking Namibe and Lobito with the inland proved to be interesting as attractive targets too: the two ports served as logistic hubs for the ATS and the 5th and 6th Military Regions of the FAPLA. Therefore, in November 1982 and May 1983, the South African seaborne reconnaissance teams raided the bridges near Namibe and Lobito, respectively and with mixed success: the attack on the bridge outside Namibe was destroyed but the attack on the one outside Lobito had to be aborted. Similarly, in June 1984, they attempted to destroy the water-cleaning plant of Luanda, but had to abandon this design because of intensive patrolling of their ingress route. In July 1984, the South African Navy went a step further. In the course of Operation Nobilis, combat divers of the 4th Reconnaissance Regiment infiltrated Luanda harbour to place underwater mines with delayed fuses under the East German merchantman MV *Arendsee* and the Angolan cargo-ship MV *Lundoge*. The resulting detonations rendered the *Arendsee* irreparable. In September of the same year, seaborne commandos went after the locomotive depot in Operation Equator, mined the local railway station and destroyed about 20 locomotives.

By that point in time, all such operations remained discrete enough to allow Pretoria to deny any kind of involvement: indeed, UNITA claimed all of them as its own. However, this changed in May 1985, when during Operation Argon a team of the 4th Reconnaissance Regiment attempting to blow up a tank farm owned by Cabinda Gulf Oil ran into a patrol during the ingress. Six out of nine operators managed to make good their escape, but two were killed and one captured. Although Captain Wynand du Toit managed to deceive his interrogators about the modus operandi of his unit (by explaining that they were infiltrated overland), Luanda now had irrefutable proof of South African involvement.

Despite international protests and demarches, Pretoria remained undeterred. On 5 June 1986, in Operation Drosdy, a team of the 4th Reconnaissance Regiment was deployed by one of the Reshef-class fast missile craft just 1,000m from the entrance to the port of Namibe. The combat divers then infiltrated the facility to destroy or damage three oil tanks, demolish a small railway bridge near the town, mine the Cuban merchantman MV *Habana* and the Soviet cargo-ships MV *Kapitan Chirkov* and *Kapitan Vislobov*. All three vessels were heavily damaged: *Habana* even capsized while attempting to steam away and thus free the main quay. Although this attack on Soviet ships had a potential for a major international escalation, Pretoria got away with it, as Moscow limited its reaction to 'fierce diplomatic condemnations'. On the contrary, Operation Drosdy met its primary goal in further disrupting the flow of supplies for the FAR and the FAPLA in southern Angola.⁴

The stillborn Operation Orange

Ironically, despite the presence of the Cuban and Soviet special forces in Angola, and the training of corresponding units of the FAPLA, there are no indications that any of the three allies ever thought of conducting comparable operations at least against South African military bases in South West Africa. One exception to this rule were officers of the high command FAR in Cuba, who decided to ask the staff of the DAA/FAR contingent in Angola to develop a plan for an attack on one of three major SAAF air bases in northern South West Africa – Ondangwa, Ruacana and Rundu – in July 1986. After calculating the probable routes, flight profiles necessary to evade early detection by enemy radars, and fuel consumption, and after losing one of the pilots involved (Captain Jorge González Perez was killed outside Menongue, on 25 July 1986), Cuban pilots made their first related test flight from Lubango to Menongue on 5 August 1985. As the preparations for such a mission picked up pace, on 20 August a full squadron of 11 MiG-23MLs was redeployed to Menongue, and test-flights intensified. It was from there that, amongst others, Trujillo Hernández made a test flight at full fuel load to Ongiva, near the border to South West Africa, on the next day.

Gradually, a plan came into being – codenamed Operation Orange, and developed with the help of satellite photographs



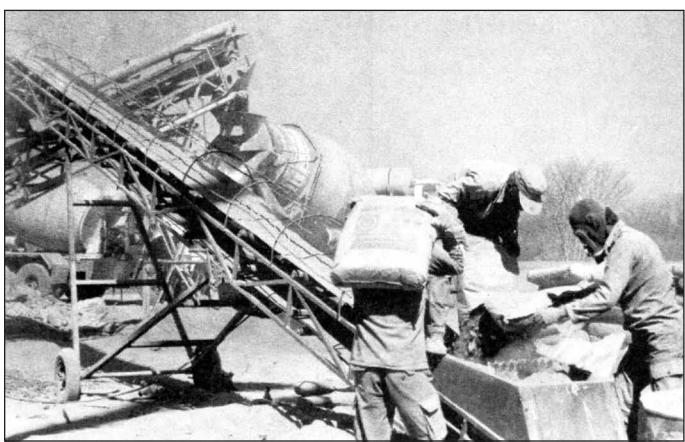
A still from a Cuban TV documentary showing MiG-23ML serial C406 rolling down the taxiway of the newly-constructed Cahama AB, armed with R-24 and R-60 air-to-air missiles. (Albert Grandolini Collection)



Cuban pilot Ezequiel Cancela in the cockpit of the MiG-23ML C432: a version designed as an interceptor, but capable of deploying unguided rockets, bombs, and Kh-23 radio-command guided missiles, and with sufficient range to reach at least SAAF bases in northern South West Africa. (Ezequiel Cancela Collection)



Captain Jorge González Peres (here photographed in the cockpit of a MiG-21UM), was killed while flying a MiG-21 near Menongue on 25 July 1986. González Perez is known to have returned a badly damaged MiG back to base, a day earlier. What exactly happened during his final sortie remains unclear: he was in a dive for an attack with S-5 rockets and reported on the radio that he was firing them. The next his wingman saw was a large explosion on the ground. (via Luis Dominguez)



A scene from the construction of Cahama AB in 1988. The result was one of the most modern air bases in Angola: although never used to launch air strikes on South African installations south of the border, this facility was demonstratively occupied by the DAA/FAR contingent in Angola, later on, in order to intimidate Pretoria. (Albert Grandolini Collection)

obtained from Moscow – envisaging the strike to be led by two MiG-23s armed with Kh-23M radio-command guided missiles (ASCC/NATO-codename ‘AS-7 Kerry’) which would be deployed to knock out air defence positions. These were to be followed by four jets armed with FAB-500M-62 general purpose bombs, while four other MiG-23MLs were to fly top cover armed with R-24 and R-60 missiles (that is: the leader with two R-24s and two R-60s, and the wingman with four R-60s only), and one jet was to be kept in reserve. Moreover, the entire formation was to return to Huambo so to avoid any possible retaliation strike by the SAAF on Menongue. Because nobody had recent experience in deploying Kh-23s, a test-strike with them was flown by Eduardo González Sarria in the form of an attack on an abandoned UNITA base in the Mavinga region (ironically, later on it turned out that the base was very much still in use, and the missile narrowly missed a group of insurgents). The planning went on through August 1986, but no order for the mission to be launched was ever issued. Eventually, in September 1986 the plot was cancelled for fear that the South Africans had already been informed about such intentions. Thus ended the idea for a mission that was almost certain to have profound psychological impact upon not only the entire SAAF and its future planning and behaviour, but probably that of the entire SADF.⁵

New Air Bases and Radar Stations

That said, the idea of exercising pressure upon South Africa through threatening to strike targets in South West Africa did not go away. On the contrary: in 1986, the Angolans contracted the Cuban company UNECA for expansion of an old airstrip and the construction of an entirely new air base in southern Angola. The first was the old airstrip roughly half-way between Lubango and Chibemba, about 230 kilometres north of the border, where also a new radar station was erected. Much bigger – and potentially

much more threatening for the SAAF – was the construction of a major air base with two 2,500-metre-long runways and 14 blast pens north of Cahama (on the site of an old airstrip), just 120 kilometres north of the border. In the east, Lucusse – and its nearby airstrip – was heavily fortified and received a radar station, thus enabling better coverage of the Cazombo salient. Finally, a new radar station was constructed in Longa, about 70 kilometres east of Menongue and 100 kilometres north of Cuito Cuanavale. All of these bases and radar stations were operational by the end of 1987.

5

Operação Saludando Octubre

Through early 1987, officers of the SMMA began lobbying the leadership of the MMCA, MPLA and the FAPLA for a renewal of Operation Second Congress during the dry season that year. Once again, the MMCA – and even Havana – flatly refused to take part, for exactly the same reasons as two years before: consisting of entirely conventional operations, the plan envisaged the involved forces advancing into an area within easy reach of the SAAF, while exposing their supply chain to the FALA. Arguing that they had learned all the necessary lessons, the Soviets countered that the new offensive would involve much bigger and better equipped formations, capable of bulldozing their way against whatever opposition they might encounter, and well-protected by anti-aircraft defences. Not convinced, the Cubans attempted to dissuade the Angolans: in an attempt to explain why the operation was doomed to fail, the contemporary head of the MMCA, General Arnaldo Tomás Ochoa Sánchez – one of the most respected officers of the FAR and probably the most experienced and successful Cuban strategist of the 1980s – repeatedly met the Chief-of-Staff FAPLA, General Ndalu, but to no avail. Once again, the High Command of the FAPLA proved easy to convince – for exactly the same reasons as two years earlier: the Soviets promised to deal a killing blow to UNITA by seizing Mavinga and then use it as a springboard to take Jamba. Consequently, and just as in 1985, the Cubans restrained themselves from participating.

Mechanised Juggernaut¹

Named in tribute to the 70th anniversary of the October Revolution in Russia of 1917, the offensive codenamed the Salute to October or Saluting October (*Operação Saludando Octubre*) was based on the most comprehensive and extensive military build-up in Angola ever. This began as early as of May 1987, when a host of FAPLA units began converging on Cuito Cuanavale. While most of around 11,400 troops of the nine brigades about to become involved reached their starting points by marching down the road from Menongue, a number of Soviet Ilyushin Il-76 (ASCC/NATO-codename ‘Candid’), An-12 and An-26 transports hauled the ammunition and equipment from Luanda to Cuito Cuanavale and Menongue with a tempo of eight flights per day.² By early July, not only were sufficient stocks of supplies available in Cuito Cuanavale, but a forward logistics base had been constructed in the Tempue area, on the southern side of the Cuito River. Following Soviet advice (a total of 62 Soviet Army officers were attached to the involved units), the command of the 6th Military Region organised its units into two division-sized task forces, as listed in

Table 8. Each of the two task forces was further reinforced by at least one independent mechanised infantry battalion equipped with BTR-60s, and batteries of BM-21s and 130mm M-46 guns drawn from the 68th Ground Artillery Brigade (Brigada de Artilharia Terrestre, BAT). Estimations about the number of armoured vehicles assigned to all these formations vary, but a conservative assessment is that there were about 80 T-54/55s in total, and up to about 30 PT-76s. On the top of this, four additional brigade-sized formations were to run supporting operations, primarily related to securing the bases in Cuito Cuanavale and Tempue, and supply convoys for units advancing on Mavinga: the Soviet planners expected these to prevent a situation where the striking forces would be cut off with tragic consequences. For similar reasons, both of the task forces were to include multiple cisterns carrying drinkable water. Contrary to the operation in 1985, this time the FAPLA took care to conduct extensive reconnaissance: three independent reconnaissance battalions were established in 1986, all with the aim of addressing the endemic lack of field intelligence that had plagued the Angolan armed forces for years, and one each was assigned to the commands of the 3rd, 5th and 6th Military Regions. Each of these units included two companies of seven BMP-1s, and one equipped with PT-76 amphibious tanks. During preparations for the Salute to October, not only were all of the involved brigades reinforced through creation of their own reconnaissance company, but two reconnaissance battalions were redeployed to the 6th Military Region, and one attached to each of the two task forces. Finally, great care was taken to obtain sufficient bridging equipment, and train all the involved units in its use.

Air defences were bolstered to unprecedented levels. Not only was the entire 52nd BDAA of the FAPA/DAA – equipped with four batteries of the deadly Osa-AK SAM systems (ASCC/NATO-codename ‘SA-8 Gecko’) – deployed in the Cuito Cuanavale area: when the decision was taken to split this unit so that one of its batteries would protect each of the two task forces, while the other two were to be kept back for protection of the crucial airfield and local installations, the FAPA/DAA moved another anti-aircraft brigade – the 24th BDAA – into the combat zone. Moreover, the FAPLA took care to bolster the anti-aircraft protection of every brigade through attaching at least a battery each of SA-9 self-propelled SAMs and ZU-23 towed AAA, and several teams equipped with the venerable SA-7 and more advanced 9K313 Igla MANPADs (ASCC/NATO-codename ‘SA-16 Gimlet’). For example, just the 47th BrIM included four SA-13 SAM systems, a battery of six ZU-23s, and one platoon of SA-7s and SA-16s.

Table 8: FAPLA ORBAT for Operation Salute to October, July 1987

Unit	Commander	Notes
6th Military Region	Colonel Francisco Deolindo da Rosa 'Facho'	
1st Task Force	Lieutenant-Colonel Ngueto	
16th Brl	Captain Franco	1,000 troops
21st Brl		2,000 troops
2nd GT		centred on the 1st Independent Tank Battalion
2nd Task Force	Major Tobias Domingos	
47th BrIM		1,400 troops
59th BrIM		
1st GT		including a company of T-54/55s
Support Forces		
8th Brl	Major Emiliano	tasked with escorting supply convoys along the road from Cuito Cuanavale to Mavinga
13th BrDA		tasked with the defence of Cuito Cuanavale, reinforced by the 2nd Independent Tank Battalion (equipped with 22 T-54/55 MBTs)
24th BDAA		FAPA/DAA unit; including at least two SA-3 groups
25th Brl	Captain Valeriano	1,600 troops; tasked with protecting supply convoys from Tempue to the two task forces, expected to move out at a rate of four times per month
52nd BDAA		four batteries of SA-8s; two protecting Cuito Cuanavale, one moving with each of the two Task Forces
66th BrIL		tasked with protection of supply bases in the Tempue area



Cuban personnel assigned to the 24th DAA in 1987, with one of that unit's V.601 missiles (SA-3 SAM) in the background. (via Luis Dominguez)

Nothing New

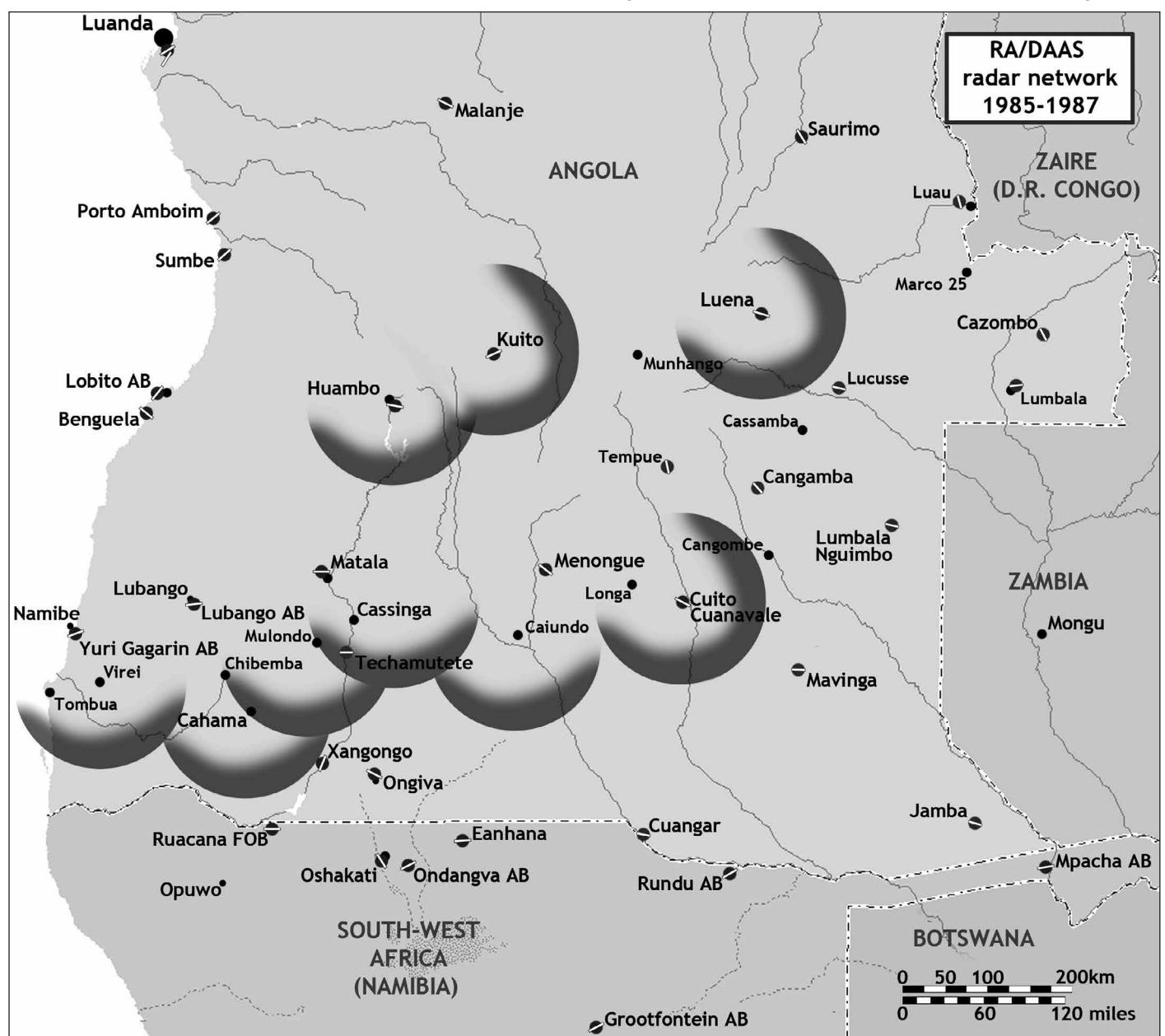
Despite this huge concentration of mechanised forces and firepower, the Soviet planning for Operation Salute to October was not particularly imaginative: indeed, the essence was almost a carbon-copy of that for the failed Second Congress. Certainly enough, there was no way for the 8,000 FALA combatants estimated as deployed in the Mavinga area to stop the two FAPLA task forces: however, the Soviets once again grossly underestimated both the South African determination to secure the survival of UNITA and the effectiveness of their air power. Foremost, the leadership of the SMMA, the 6th Military Region and the High Command FAPLA all grossly ignored basic rules about operational security, as recalled by Lieutenant-Colonel Pitor Pavlovich

Bondarenko about a conference of senior Soviet advisors from July 1987:

Preparation for this operation was awful. As a result, the map shown at this conference and the overall plan became known not only to us, but also to the enemy. I think that even Angolan women knew that an offensive was planned. It was extremely absurd! ... Precisely at that point in time, Lieutenant-General Kuzmenko, principal Soviet military advisor to Angola, had left and was replaced by Lieutenant-General Guzev. I asked the latter, "since you are planning the operation now, what do you think the outcome should be...?" (When asked about how to keep the units supplied in the field; authors' note), Major-General Ryabchenko, advisor to the Chief-of-Staff FAPLA, was explaining things like, "During the offensive you will be taking fuel and ammunition from the captured UNITA bases." Can you imagine an advisor to the chief-of-staff saying such

nonsense?!? UNITA troops did not leave a drop of fuel, nor a single cartridge behind, otherwise they would be punished by immediate execution. They took everything with them, even the wounded.... There were other failures in planning. During the offensive, armoured personnel carriers or tanks had to cross an area densely covered with bush and small trees. This was why their fuel consumption was six litres per kilometre, compared to two litres while driving on the road. This meant they ran out of fuel after only 50 kilometres, and resupply of fuel had to be arranged. But, those who drew this plan considered that two litres per kilometre would be used and that this amount would be enough to reach Mavinga...!¹³

If this was not enough, though almost exactly like in 1985, it seems that the Soviet planners essentially ignored Angolan air power. They never developed a plan for the – now – large Angolan and Cuban-operated force of Mi-25 helicopter gunships



A map of the FAPA/DAAS's RA/DAAS low altitude radar coverage of southern Angola as of 1987. Notably, by deploying a number of P-12 (ASCC/NATO-codename 'Spoon Rest'), P-15/19 (ASCC/NATO-codename 'Flat Face'), and P-35/37 (ASCC/NATO-codename 'Bar Lock') early warning radars, the Angolans had a reasonably good coverage to about 150km north of the border with South West Africa – except in the east, where big gaps existed due to insurgent activity. Moreover, due to the Earth's curvature, they could not detect any kind of aerial movements at altitudes of less than 300-500 metres 80km south of Cuito Cuanavale. (Map by Tom Cooper)

Table 9: FAPA/DAA ORBAT for Operation Salute to October, July 1987

Wing	Squadron	Base	Notes
7th RATM		Luanda IAP	
	An-26 squadron	Huambo, Menongue	
9th RAC		Lubango AB	CO Captain João Baptista Costa
	MiG-21 squadron	detachments in Menongue and Cuito Cuanavale	CO Captain José Alexandre Dos Santos 'Celito'
	MiG-21 squadron	detachment in Luena	
	MiG-23ML squadron	detachments in Luena and Menongue	CO Captain João Manuel da Silva 'Jojo'
17th RAH	combined detachment (MiG-21, MiG-23, Su-22)	Menongue	CO Lieutenant José Maria Pinelas
		Huambo AB	CO Captain José Catumbela
	Mi-17 squadron	detachments in Luena and Cuito Cuanavale	
	Mi-25 squadron	detachments in Luena and Cuito Cuanavale	
26th RACB	Alouette squadron	detachments in Luena and Cuito Cuanavale	
		Yuri Gagarin AB	
	Su-22 squadron	detachment in Menongue	

to provide CAS for ground forces. Instead, they again planned a campaign of battlefield air interdiction strikes against UNITA's major bases by types like MiG-21s and MiG-23s, both of which were known as ill-suited for this purpose. According to officers of the MMCA, this was an indication of the Soviets grossly underestimating the capabilities of Mi-25s. In similar fashion, nobody within the SMMA recommend that the Angolans acquire dispensers for decoy flares to improve survivability of their combat aircraft to MANPADs, or to purchase dedicated attack aircraft like the Sukhoi Su-25 (ASCC/NATO-codename 'Frogfoot'), which was in the process of entering service with Soviet and allied air forces in Europe.⁴ Indeed, the Soviet planners entirely ignored the fact that in 1986 Carreira negotiated the acquisition of Pilatus PC-9 light strikers from Switzerland. A group of six pilots and five technicians underwent the usual 45-day conversion course abroad, and then returned to Angola to – in cooperation with personnel of the Aviation School in Negage – work-up an operational squadron. The PC-9s were eventually assigned to the Aviation School in Lobito but served the purpose of armed reconnaissance and counterinsurgency operations. They received a simple visor in the cockpit and could be armed with FN Herstal pods for 12.7mm machine guns or pods for highly effective 90mm unguided rockets.⁵ However, the type was entirely ignored during the planning for the coming operation and never deployed anywhere near the battlefield in southern Angola in 1987, even if vastly superior to comparable types in service with the SAAF and regularly operating there.

Costly Diversions⁶

Typically, the first move related to Operation Salute to October took place in May 1987, and then in the area of responsibility of the 3rd Military Region, which received the order to initiate its own offensive in south-eastern direction with the aim of lessening the insurgent pressure upon the garrison of Lucusse and tying down as much of the FALA as possible. Correspondingly, the

3rd BrI, 39th BrIL and the 143rd BDAA moved from their base in that village in the direction of Cassamba, about 90 kilometres away. The insurgents collapsed in the face of the usual, ponderous advance, and Cassamba was quickly secured: the 3rd BrI then entrenched itself there, while the 39th BrIL established a defensive perimeter around Kadimba, further east. This move proved highly successful, as the FALA rushed whatever semi-regular battalions it could get together into a counterattack. However, the insurgents did not dare launch an all-out assault: instead, they conducted constant probes and harassing attacks, while mortaring their enemy at random intervals. Indeed, it was during this battle that the FALA introduced to service its newest acquisition: Chinese-made Type-63 towed MRLS, which increased its firepower by a significant margin. Eventually, about a dozen FALA battalions converged on Cassamba and Kadimba, besieging the three FAPLA brigades. After about a week, the 3rd BrI was down to about 800 combat-capable troops (out of 1,200 at the start of the operation).⁷

After several supply convoys trying to reach them were all annihilated by the insurgents, and the FALA captured at least one BM-21 and then pressed it into service against its former owners, the condition of both FAPLA brigades became critical. As usual, the headquarters of the 3rd Military Region reacted by calling the air force for help, and thus and once again, Mi-8s and Mi-17s of the FAPA/DAA had to be deployed to fly supplies to the besieged units. Unsurprisingly, at least one Mi-8 was shot down with the loss of its entire crew. Eventually, the air bridge proved insufficient: with the available stocks of water and supplies nearly exhausted, the commander of the 3rd BrI opted for a break-out, even if having to leave behind about a dozen trucks and some stock of ammunition. These were blown up and then the brigade formed a box, spearheaded by its company of T-55 MBTs and four Shilkas. Thanks to its armour and superior firepower, the 3rd BrI punched through and, after a march of 120 kilometres during which it overcame multiple ambushes and fended off several counterattacks, returned to Lucusse in early August 1987.

The primary reason for its successful withdrawal was the fact that it conducted very aggressive, small-scale reconnaissance patrols, well in front of its intended march route.

The 39th BrIL not only lacked the firepower and armour of 3rd BrI, but also an enterprising commander: it remained idle in Kadimba, besieged and facing annihilation. The command of the 3rd Military Region thus quickly reinforced the 3rd BrI and sent it on a rescue operation in that direction. While successfully punching through two regular battalions of the FALA, supported by several Type-63s, the relief force then found itself on the receiving end of repeated air strikes by the SAAF. This in turn brought the MiG-21bis of the FAPA/DAA based in Luena to the scene: while failing to intercept any of the low-flying South African jets, these at least intimidated them by their presence.⁸ Eventually, the 3rd BrI linked-up with the severely weakened 39th BrIL, and the two units then returned back to Lucusse. Together, they punched through positions of three FALA battalions that attempted to face them head-on, completing this operation in at least a semblance of success.

Second Attempt

Although this operation severely exhausted two major units of the 3rd Military Region, its headquarters remained determined to maintain pressure upon the FALA in the Moxico province, and thus pre-empt the insurgency from withdrawing any of its units further south. Correspondingly, next the 39th, 43rd and 45th BrIL were deployed for another offensive from Lucusse against Lumbala Nguimbo and Cangamba. Crucially, this time the three brigades were separated from each other by such a distance that they could not provide mutual support. Moreover, the FALA deployed several battalions of its semi-regulars to first interdict their supply convoys, before concentrating the mass of its forces upon the 43rd BrIL: on 12 October, 43rd BrIL found itself exposed to attack from three directions, causing it 31 killed and 85 wounded, and a loss of three guns and seven vehicles. On 20 and 21 October, the FALA ambushed the 45th BrIL as it was escorting a supply convoy, causing it a loss of 55 killed and 91 wounded, and the destruction of about 80 vehicles. Disheartened, the three brigades all abandoned further advance as soon as they reached the Lungo-Bungo River.⁹

Elephant March

South African intelligence got wind about the Angolan and Soviet planning for a new onslaught on Mavinga in early 1987. By March, it issued a corresponding warning to UNITA, while on 1 May 1987 a high-level meeting was arranged between top officers of the SADF, and those of the FALA. However, contrary to earlier times, nothing of this triggered any kind of serious countermeasures – other than those already initiated: on 1 May 1987, the insurgency launched Operation Rain, which envisaged a series of attacks on supply convoys down the road from Menongue to Cuito Cuanavale. What did change subsequently was that the SADF deployed several reconnaissance parties to support the FALA units deployed in that area. One of their most successful actions resulted in an ambush of a convoy including 23 semi-trailer tankers protected by the troops of the 8th BrI underway on foot, set up about 100 kilometres east of Menongue. In a classic hit-and-run style engagement, the insurgents first let the convoy run into mines, then suddenly engaged its front and the rear before destroying 10 trucks using RPGs and withdrawing as soon as they could. Colonel Vyacheslav Aleksandrovich Mityayev,

a Soviet advisor assigned to the headquarters of the 6th Military Region at the time, explained:

The brigade escorted the petrol tankers on foot, without much support from armoured vehicles, and the road went through the savannah. The surrounding area could be easily combed. I must say that the Angolan commanders really missed the bus here. Indeed, ambushes were sometimes organised like this: the UNITA fighters see the cordon and go deep into the savannah; then, when the cordon has moved on, they move out and strike...¹⁰

Regardless of how successful or spectacular, this proved far too little to delay Operation Salute to October. The operation was initiated on 12 July 1987, with the two task forces leaving Cuito Cuanavale. This time advancing in box formations covering between five and eight square kilometres (to provide for optimal dispersion in case of an SAAF air strike), in which all the mechanised forces were grouped in the centre, and protected by the infantry marching on foot, their advance was slow: limited to a handful of kilometres a day. Moreover, such formations – while managing to prevent the insurgents from reaching their sensitive centre – proved unwieldy: by constantly surrounding them, the insurgents managed to literally prevent Angolan commanders from sending out reconnaissance patrols, effectively blinding them. In turn, having learned their lessons in 1984 and 1985, the insurgents avoided protracted engagements and instead relied on minor infantry probes, supported by indirect fire. Their aim was to slow down, cause casualties and to delay. For example, between 13 and 23 July 1987, while marching on the Chambinga high ground, the box of the 16th BrI was subjected to at least two attacks by platoon- and company-sized detachments of the FALA, and every time subjected to shelling by mortars and recoilless rifles. On 20 July, it had to repulse an attack by a full battalion of insurgent regulars. Unsurprisingly, by 23 July it suffered a loss of 29 killed and 88 wounded and had one of its BM-21s destroyed by a direct rocket hit. First Lieutenant Aleksander Ivanovich Kalan, a Soviet translator serving with the 16th BrI, recalled:

The objective of the infantry [authors' note: FALA] was to attack our forces in order to determine the location of the units. Fire was opened from as far as 800 metres away. Naturally, FAPLA fired back, and that was precisely what UNITA wished. As soon as FAPLA units started to counterattack, UNITA dispersed. At that moment the UNITA artillery went into action: M-60, M-81, M-120 mortar launchers, 106mm USA-made recoilless guns; the Chinese-made 107-mm trailer-mounted multiple artillery rocket system or its South African version.... With their experienced spotters the accuracy of hits was very high.

UNITA kept us under constant fire during our advance.... Our progress was quite slow, with losses of both personnel and equipment. The Brazilian Engesa trucks often had problems with their cardans and the clutch would fail because of slipping on the sandy soil. When the cardan failed, we had to tow the vehicle with a tank or a Ural. The Ural, usually looking worn and battered, would crawl and drag the Engesa, while the tanks would break down. And the tank broke down, you had to wait there, take up a defensive position and stay until you were sent replacement parts. Repairs took quite a long time. Sometimes we would halt and wait for a week or two.... To help you

Osaka Brigade

The principal lesson from Operation Second Congress was the absolute necessity to provide FAPLA brigades advancing into UNITA-controlled territory with the best air defences available: otherwise, they had to be expected to become subjected to murderous air strikes by the SAAF. Therefore, starting in 1986 all the FAPLA brigades deployed in the south were reinforced through additional anti-aircraft elements, equipped not only with towed (or, more often: truck-mounted) ZU-23 guns, but including MANPAD-teams equipped with 9K34 Strela-3 (ASCC/NATO-codename 'SA-14 Gremlin'). Even more important was the establishment of several powerful anti-aircraft units within the FAPLA:

143rd Mixed BDAA emerged within the 3rd Military Region and included two SAM units equipped with tracked 9K35 Strela-10 (ASCC/NATO-codename 'SA-13 Gopher') SAM systems, and three batteries with six 57mm S-60 automatic guns each. In 1987, this unit was further expanded through the addition of ZSU-23-4 Shilka self-propelled, radar-controlled anti-aircraft guns and KMTLB command stations.

At least as powerful was a unit the precise designation of which remains elusive, but which is known to have included four tracked 2K12 Kub SAM systems (ASCC/NATO-codename 'SA-6 Gainful'), each of which had four transporter-erector-launchers (TELs) carrying three missiles (for a total of 12 SAMs).¹³



A crew of the Osaka Brigade, with their mount. (Albert Grandolini Collection)



The command post of every battery of 57mm S-60 medium AAA contained a fire-control radar and was installed on an Ural truck. The ASCC/NATO-codename was 'Flapwheel'. (SAAB)

However, perhaps the most notorious (at least for the SAAF) became the 52nd Anti-Aircraft Rocket Brigade, established at Cuito Cuanavale, and equipped with 9K33 Osa-AK (ASCC/NATO-codename 'SA-8 Gopher') mobile SAM system.

As of the mid-1980s, the SA-8 was one of the most advanced SAM systems in the Soviet arsenal, capable of engaging targets from 5 to 5,000 metres altitude, out to 20 kilometres away. Each Osa-AK SAM battery included four transporter-erector-launchers carrying four missiles, supported by a mobile P-19 early warning and fire-control radar. Commanded by Major Jota, and nicknamed the 'Osaka Brigade' (which came from the Russian designation for its principal weapons system 'Osa-AK'), the 52nd was fully operational by mid-1987, and included four SAM batteries: two of these remained in Cuito Cunavale (thus reinforcing an already imposing array of anti-aircraft defences there), while one battery each was attached to the two brigade-sized task forces advancing on Mavinga.¹⁴ Mikhail Fedosyuk, one of Soviet advisors assigned to the Osaka Brigade, recalled:

I arrived in Angola in October 1986, and from early 1987 was directly involved in organisational affairs. We selected a group of 16 gunners that was sent for training in the Soviet Union. By August 1987, 16 Strela-10 combat vehicles arrived from the Soviet Union, 14 of which were transported to Menongue by Il-76 aircraft.

understand our speed: in three months, we had covered, as the crow flies, about 50 kilometres.¹¹

Eventually, the HQ 6th Military Region was forced to order both task forces to stop at the Chambinga Plateau and regroup and resupply there before continuing the advance on Mavinga. Of course, as soon as the movement resumed, FALA attacks continued in the same fashion as before. As a result, the 16th BrI – which started this offensive with more than 1,000 officers and other ranks but had then been subjected to another series of attacks by the insurgents of the 85th semi-regular and 4th and 5th regular battalions – was worn down to 780 combat-capable troops.¹²

Modular Paradoxes

Despite all they had experienced in the first two months of Operation Salute to October, the Angolans continued their advance. Indeed, despite their successful ‘needling’ of the enemy, the insurgents had no illusions about their capability to stop a FAPLA offensive of this magnitude. For exactly the same reasons as so often over the last two years, this forced Pretoria to launch its own military intervention: after all, the government of South

Africa remained keen to prevent SWAPO from establishing permanent bases in southern Angola and start intensively infiltrating South West Africa. Its security services there already had their hands full tracking down those insurgent groups that were entering from the Cunene province of Angola. South Africa thus did not really ‘fight against Communism’ but needed UNITA to act as a buffer and bulwark. Correspondingly, on 22 June 1987, the SADF initiated Operation Modular with the aim of saving UNITA. Run under the overall command of Lieutenant-General Andre ‘Kat’ Liebenberg, this was to remain a ‘low-profile’ action, with the SADF initially only intending to repeat the exercise from 1985: the 32nd Battalion and other special forces parties were to infiltrate Angola and support the FALA by calling in artillery and air strikes. The emphasis was on limiting friendly casualties as much as possible – to a degree where even the idea of conducting an offensive against enemy supply bases like Cuito Cuanavale or Menongue from the west, was completely ruled out. Essentially, the SADF thus discarded its own doctrine of mobile warfare right from the start. On the contrary, the primary objective of Operation Modular became to spoil the FAPLA offensive and convince Luanda to give up and withdraw its forces. The paradox

Table 10: SADF ORBAT, Operation Modular, September 1987¹³

Unit	Equipment	Notes
20th Brigade		CO Colonel Deon Ferreira
Combat Group Alpha		CO Commandant Kobus Smith
Mechanised Infantry Company	14 Ratel-20	drawn from 61st Mechanised Battalion
Motorised Infantry Company	20 Buffel	drawn from 32nd Battalion
Anti-Tank Squadron	14 Ratel-90	drawn from 61st Mechanised Battalion
81mm Mortar Group	4 Ratel	
Ystervark Troop	4 Ystervark	
5th Regular Battalion FALA		
Combat Group Bravo		CO Commandant Robbie Hartslef
Motorised Infantry Company (reinforced)	20+ Buffels	drawn from 32nd Battalion
Motorised Infantry Company	14+ Casspir	drawn from 101st Battalion
Motorised Infantry Company	14+ Casspir	drawn from 101st Battalion
Anti-Tank Squadron	8 Ratel-90, 4 Ratel ZT-3	drawn from 32nd Battalion
Support Company	81mm mortar platoon, ZPU machine gun platoon, Milan platoon, 106mm recoilless gun platoon	drawn from 32nd Battalion
3rd Regular Battalion FALA		
Combat Group Charlie		CO Major Dawid Lotter
Mechanised Infantry Company	8 Ratel-20	drawn from 61st Mechanised Battalion
AT-Platoon	8 Ratel-90	drawn from 61st Mechanised Battalion
81mm Mortar Group	4 Ratel	
20th Artillery Regiment		CO Commandant John du Randt
P Battery	Valkiri MRLS	
S Battery	120mm M5 mortars	
Q Battery	G-5	
Motorised Infantry Company	20 Buffel	drawn from 32nd Battalion
Motorised Infantry Company	20 Buffel	drawn from 32nd Battalion
Ystervark Troop	4 Ystervark	
Anti-Aircraft Battery, FALA	3 FIM-92A, 2 SA-7, 4 ZPU	
Anti-Aircraft Battery, FALA	3 FIM-92A, 2 SA-7, 4 ZPU	

was that this aim was to change several times over the following months, dragging South Africa ever deeper into what was actually still a civil war in Angola.¹⁵

The first SADF units were deployed into Angola in early August 1987: they included the bulk of the 32nd Battalion, several reconnaissance teams and a troop of Valkiris. These fought their first engagements starting on the 19th of the same month – only to be forced into the sudden realisation that the strength of the enemy was much superior to what they had experienced two years earlier. Correspondingly, in late August 1987, the SADF rushed in additional reinforcements in the form of the 61st Mechanised Battalion – without its Olifant MBTs, and with its artillery using 120mm mortars instead of G-5 guns – two infantry companies of the 101st Battalion, and then a battery of G-5 guns. By early September 1987, these forces – about 1,500 officers and other ranks under the command of Colonel Deon Ferreira (commander of the 20th Brigade SADF) – were reinforced through the addition of two regular battalions of the FALA, and reorganised into Combat Groups Alpha, Bravo and Charlie, supported by the 20th Artillery Regiment. By this time, the SAAF also concentrated seven Buccaneer and Canberra bombers, and 12 Mirage F.1AZ and eight Mirage F.1CZ fighter-bombers at Grootfontein AB in South West Africa.¹⁶

Advance on Lomba

Once re-supplied and rested, the four FAPLA brigades resumed their advance from the Chambinga high ground in three directions, on 15 August 1987: 16th BrI on the eastern flank; 21st BrI in the centre; 47th and 59th BrIM on the western flank.

The 16th BrI experienced the greatest problems on its march. It was confronted by the 4th Regular Battalion, FALA, which let it run into a series of ambushes, and needled it with numerous small-scale, flanking attacks, eventually forcing the brigade to stop for three days, from 22 until 25 August. Reorganised, the 16th BrI resumed its march, reaching the village of Cunjumba on 3 September. However, by then, the brigade was depleted to about 780 officers and other ranks, and out of options other than to stop and entrench where it was. The 21st BrI advanced slowly, early on, before dashing for the Lomba River. After travelling for 40 kilometres in just two days, on 31 August it was only a few kilometres from the river. The westernmost prong of the FAPLA offensive included the two most powerful units: the 47th and 59th BrIM. The latter first marched eastwards along the northern side of the Lomba River, thus approaching the route of the 21st BrI, while the 47th BrIM moved westward until it reached the spring of the Lomba on 30 August, circumnavigated it and turned east along its southern bank. Despite the failure of the 16th BrI to continue its advance on the eastern flank, by early September 1987 the FAPLA thus had the 47th BrIM south of the Lomba, while both the 21st BrI and 59th BrIM were preparing to cross the river that, in the area where it was traversed by the road to Mavinga, was a major obstacle: its banks were surrounded by a wide, marshy area, impassable for any kind of vehicle. Thus, both units stopped, and began deploying small reconnaissance troops and infantry detachments with the aim of securing a bridgehead on the southern bank, before engineers were to construct Soviet-made pontoon bridges. The latter were not enough and the engineers also had to construct causeways leading to the bridges, so as to enable even the heaviest vehicles to approach the crossing point. To the disadvantage of the Angolans, the river and the marshes

surrounding it were the only open spaces in this area: the southern bank of the Lomba was covered by dense bush.

Any crossing of a water obstacle is a major undertaking for any armed force. Unsurprisingly, this was the opportune moment for the South Africans to deliver their first blow. Their reconnaissance teams had been closely monitoring the advance of the FAPLA units since at least 19 August 1987, and thus were in a perfect position to start calling in artillery strikes on them. Well hidden in the bush on the southern bank of the Lomba, they had a perfect view of the Angolan crossing sites. Furthermore, the SADF signals intelligence units – always supported by the FAPLA's endemic lack of security in use of radio-communications – worked so well that the South Africans had meanwhile established a perfect intelligence picture about the enemy: indeed, they knew almost in real time what their opponent intended to do, or was actually doing. Finally, the FALA and SADF forces defending the line on the Lomba River had the advantage of operating on interior lines, which meant that they could rapidly move from one part of the battlefield to the other, concentrate and successively defeat FAPLA's brigades, one after the other. In comparison, the Angolan and Soviet commanders were all but blind: not only had their intelligence entirely failed to detect the South African presence, they made no use of at least two MiG-21R reconnaissance fighters of the FAPA/DAA and the capability of Angolan Su-22s to carry KKR-1 reconnaissance pods. Furthermore, they never thought to let at least the helicopter gunships conduct visual reconnaissance, and conducted no ground reconnaissance south of the Lomba, and thus had next to no idea about FALA dispositions.¹⁸

This is not to say that the South African reconnaissance was 'perfect'. Quite the contrary: while the communications- and signals intelligence (COMINT/SIGINT) of the SADF indicated the presence of some kind of 'secret weapon' carried by the Angolan ground forces, there was no clear idea what exactly was meant by this. Correspondingly, neither the SADF nor the SAAF knew that this referred to the presence of the two SA-8 SAM batteries of the 52nd BDAA travelling with the ground forces – one assigned to the 21st BrI, and the other to the 47th BrIM. While taking necessary precautions, South African pilots were informed to expect only the 'usual' mix of old SA-7s, towed ZU-23 AAA and ZPU heavy machine guns. Moreover, the general level of knowledge about the FAPLA was that regardless what kind of mobile SAMs the Angolans had acquired, these were always deployed in static positions, and were rarely redeployed even if those positions were well-known to the opponent. As a direct result of this blunder, the SAAF deployed several Aermacchi AM.3C Bosbok light aircraft to Mavinga airstrip, from where these flew artillery observation sorties. Their pilots knew that as long as they remained outside the range of light anti-aircraft weapons, they were safe. The inevitable happened only days after the South Africans became involved in the battle.

The Gecko Shock

On 31 August, G-5 howitzers and Valkiris of the SADF opened fire on the FAPLA units for the first time, as the 21st BrI and the 47th BrIM were still attempting to approach the northern bank of the Lomba. The FAPA/DAA was sent to find the guns and bomb them but lost the MiG-21bis flown by 2nd Lieutenant Luis António Morais 'Luis Chato' to FALA's Stingers on 2 September 1987. Thus began a 'game of cat and mouse', in which the South African artillerists, were hiding by day, only to go into action by night – guided by Bosboks – when the Angolans were not flying.



A crew from the Osaka Brigade with their big, self-propelled 9A33BM3 transporter-erector-launcher, during a break in a march through the bush. Notable is the erected fire-control radar, and six containers for 9M33M2 (SA-8) SAMs. (Albert Grandolini Collection)

However, late on 3 September 1987, Bosbok serial number 934, flying reconnaissance over positions of the 21st BrI was suddenly shot down while underway outside the range of the MANPADs and small-arms fire of the FAPLA, as recalled by Sergeant Piet Fourie, a member of one of the reconnaissance teams stalking the Angolans:

That night we heard an aircraft approach from the south, which flew east-west and back on the same track at approximately 8,000 feet. I tried to get hold of it on the VHF radio. A SAM missile was fired at it and we desperately tried to warn the pilot to go south. According to the information received later, there were other SADF elements south who had communications with them. According to them, the pilot reported an RPG-7 rocket that was fired at them at 8,000 feet. Another SAM was fired and we could clearly see that it was a hit. The aircraft went down south of our position, in pieces.¹⁹

Both the pilot, Lieutenant Richard Glynn and the observer, Commandant John du Randt (CO 20th Artillery Regiment) were instantly killed. Their bodies were recovered by the FALA. This, entirely unexpected appearance of the SA-8 – considered the most lethal SAM in Angolan service – caused such a shock for the SAAF that not only the Bosboks but even Canberra bombers were promptly withdrawn from operations. Activity of all other strike aircraft over the battlefield was henceforth limited to low altitude toss-attacks by Mirage F.1AZs.

Failed Crossing

With the South African artillery-spotting aircraft out of the way, the 59th BrIM soon proved perfectly capable of taking the South Africans by surprise. On 6 September 1987, its commander deployed one of his infantry battalions into ‘reconnaissance in force’ towards the northern bank of the Lomba River. Undetected

by the FALA and the SADF, the unit approached a clearing where a reconnaissance detachment of the 32nd Battalion mounted on three Casspir mine-resistant, ambush protected vehicles (MRAPs) was meeting with a FALA team of 18, and a small supply convoy. The Angolan battalion commander quickly deployed two of his companies for attack, while sending the third into a flanking movement, to close the trap and then assaulted. Although shocked, losing one of their soldiers, and leaving behind a Casspir MRAP and a Whiting recovery vehicle, the South Africans managed to escape, while nothing is known about the FALA’s losses in this clash.²⁰

Three days later, on 9 September 1987, the 21st BrI attempted to repeat the

exercise by deploying two of its infantry battalions to cross the Lomba and establish a bridgehead. However, this was much too big a movement to remain undetected by the 3rd Regular Battalion of the FALA. The insurgents called Combat Group Bravo for help and in the first clash, the South Africans knocked out a single BTR-60PB APC. A major showdown of the ground forces was now inevitable. The following day, immediately after an artillery preparation, Combat Group Bravo deployed three Ratel ZT-3s of its anti-tank squadron, supported by two infantry companies, into a flanking attack on the Angolan bridgehead. Entrenched along the tree line the Angolans initially offered fierce resistance, but eventually fell back in disorder, leaving behind some of their heavy arms and permitting the South Africans to reach a position in full view of a newly-constructed pontoon bridge and the causeways – just as the commander of the 21st BrI ordered his tank company to cross the river and launch a counterattack. Exposed in the open to a well-concealed enemy, three T-54s were knocked out by Ratel ZT-3s and Ratel-90s in quick succession. Although the mass of troops of the 21st BrI rallied on the northern bank, this crossing effort ended in a failure: the brigade lost over 100 killed, three tanks, two mortars and a collection of other arms. In turn, Combat Group Bravo had only two wounded.²¹

Troublesome 47th BrIM

While Bosboks acting as artillery observers were withdrawn from operations over the battlefield, the SAAF did continue to operate a small number of Israel Aircraft Industries Seeker reconnaissance unmanned aerial vehicles (UAVs) for reconnaissance purposes. Combined with the lack of coordination between FAPLA’s brigades, COMINT/SIGINT-activities, and the operations of SADF ground reconnaissance teams, these enabled the South African commander to switch his attention at the next Angolan unit south of the Lomba River. During the evening of 11 September 1987, Combat Group Bravo was ordered westwards, to face the



A nice study of the Mirage F.1AZ serial number 217 underway for another strike in late 1987. Notable is the weapons configuration including wingtip mounted V3B or V3C Kukri air-to-air missiles, RP.35 drop tanks on inboard underwing pylons, and Mk.82s on outboard underwing pylons as well as on the surfboard under the centreline. (SAAF)



A cluster bomb unit (CBU) seen installed on the surfboard under the centreline of a Mirage F.1AZ. The SAAF began deploying CBUs – ‘area weapons’ designed to scatter bomblets filled with white phosphorus – around 16 September 1987. (SAAF)

47th BrIM, which was moving in the opposite direction with the intention of linking-up with the 59th BrIM. While tracking the enemy for two days, the South Africans deployed their unit into a well-set ambush, with at least one FALA battalion on the southern flank of the FAPLA brigade. The South Africans opened the engagement on 13 September 1987 with the customary artillery barrage, consisting of 120mm mortar bombs and 155mm shells from the G-5 battery, exploited by Ratel-90s and ZT-3s from the Anti-Tank Squadron of the 32nd Battalion to reach favourable positions. However, the leading battalion of the 47th BrIM had just seized a large UNITA base, including an elaborate system of deep and wide trenches, enmeshed by thick bush which provided it with excellent cover – and fought back with gusto. The terrain was muddy and, together with the width of some of trenches, made the movement of wheeled South African vehicles problematic. Several became bogged down by the time the T-54 company of the 47th BrIM launched a counterattack. Supported by accurate mortar fire, and although losing several MBTs, Angolan tankers knocked out one of the Ratels and two Casspirs, causing some of the infantry of the 101st Battalion to flee in disorder. Although meanwhile reinforced by Combat Group Charlie, the troops of which claimed another two T-54s, when informed about another company of Angolan tanks approaching the scene, the commander

of Combat Group Bravo decided to withdraw. Thus ended a six-hour engagement in which the SADF lost at least seven killed and seven wounded, while claiming to have killed ‘at least 200 enemy soldiers’. Exact Angolan casualties remain unknown: what is certain is that the commander of the 47th BrIM ordered his unit to stop and entrench.²²

The Angolan brigade remained idle for the next three days. On the contrary, Colonel Ferreira reshuffled his forces: Combat Groups Bravo and Charlie were withdrawn east to keep the 21st BrI and the 59th BrIM in check, while the more powerful Combat

Group Alpha moved in with the task of launching another attack on the 47th BrIM, this time from behind the screen of FALA infantry that kept the enemy fixed. Early in the morning of 16 September, after making a large detour, the SADF combat group achieved surprise by attacking from the west into the back of the Angolan formation which was subjected to a heavy artillery barrage – and a large strike by Mirage F.1s. The later blasted the Angolan positions with more than 100 Mk.82 bombs filled with ball bearings, and cluster bomb units filled with white phosphorus. Nevertheless, the Angolans stoically endured whatever the South Africans threw at them and held their positions in the dense bush. Moreover, their artillery zeroed-in on the Ratel-20s and -90s advancing through a densely wooded area: shells bursting in the trees sprayed SADF armour with splinters, forcing the infantry down and stopping the attack cold. For once, the gunners of the FAPLA had been provided with something they were sorely lacking – but the South Africans were using almost all the time – airburst fuses for their shells. On the negative side, due to the visibility being limited to perhaps 20 metres, most of the RPG-rounds fired from well-concealed Angolan positions at the approaching enemy armour, failed to arm themselves before hitting, and thus not one SADF vehicle was knocked out. After one hour of chaotic battle, Combat Group Alpha abandoned its attack and withdrew behind a smoke

Reinforcement of the ATS

Always sceptical about the Soviet and Angolan designs, Havana was concerned about repercussions and thus reached the decision to reinforce the Southern Group of the Cuban forces before the detailed planning for Salute to October began. Correspondingly, it deployed another tank brigade to Huambo and, in early 1987, redeployed the Malanje Tank Brigade from Malanje to Lubango. After its long march, the latter unit was disbanded and its subunits re-assigned to the resident formations. Correspondingly, by November 1987, the ATS was composed as listed in Table 11. Between them, these FAR units were equipped with a total of 377 PT-76 amphibious tanks, T-54s and T-55s and 399 BRDM-2 armoured cars, BTR-60PB APCs, and BMD-1 and BMP-1 IFVs, supported by 108 artillery pieces, and 48 BM-21 systems. Moreover, in addition to a tank brigade and a GT in Bié, the ATN had its Luanda Detachment (two companies of airborne troops, two motorised infantry companies, two tank battalions, and an artillery group), with another 169 MBTs, 102 other armoured vehicles, 40 D-30s and 11 BM-21s.²⁴

Table 11: Tank Brigade ORBAT, FAR, Malanje, July 1987

Element	Equipment
Tank Battalion	T-55
Tank Battalion	T-55
Motorised Infantry Battalion	BTR-152, BTR-60
Motorised Infantry Battalion	BTR-152, BTR-60
Howitzer Group	D-30
MRLS Group	BM-21
Shilka Group	ZSU-23-4
SAM Group	SA-13
Support Elements	

Note: This box continues with the two photos overleaf.

Table 12: ORBAT of the ATS, November 1987

Unit	Location	Complement	Tanks	Other Armoured Vehicles	Artillery
30 Brigada de Tanques	Huambo	2,520	60 T-54 20 T-55	49 BTR-60PB 31 BMD-1 15 BTR-152 4 BRDM-2	18 D-30 12 BM-21
40 Brigada de Tanques	Lubango	3,418	31 T-62 31 T-54 10 PT-76	40 BTR-60PB 31 BMP-1 9 BRDM-2 5 BMD-1	6 M-46 18 D-30 12 BM-21
50 Brigada de Tanques	Matala	3,281	42 T-54 20 T-55 10 PT-76	42 BTR-60PB, 32 BMD-1, 9 BRDM-2	N/A
60 Brigada de Tanques	Jamba	3,240	42 T-54 30 T-55 10 PT-76	41 BTR-60PB, 32 BMD-1, 8 BRDM-2	6 M-46 18 D-30 12 BM-21
70 Brigada de Tanques	Menongue	2,546	31 T-55 19 T-54	35 BTR-60PB, 6 BRDM-2	6 M-46 12 D-30 4 BM-21
Grupo Táctico (independant)	Namibe	1,036 men	19 T-54 12 T-55	9 BTR-60PB, 3 BRDM-2	6 D-30 4 BM-21

screen, with the sole success it claimed being the destruction of one mortar pit.²³

After both sides stopped to review their positions and resupply, the Angolans were the first to make the next move. On 19 September, 21st BrI made another attempt to cross the Lomba River and recover its original bridgehead. This manoeuvre was instantly detected by the FALA and broken by a concentrated artillery and MRLS barrage. For the time being, the battle died down in a stalemate in which the South Africans enjoyed an advantage thanks to their superior equipment: G-5s were longer-ranged than anything in service with the FAPLA and delivered a heavier volume of fire than the Angolan artillery, the FAPA/DAA and the DAA/FAR could unleash upon the enemy, combined.

Therefore, they proved capable of keeping the enemy down by constant shelling. Moreover, thanks to the availability of Seeker UAVs, the fire of G-5s was extremely precise, and constantly causing casualties to the Angolans – while, in comparison, the gunners of the FAPLA not only had no such means of controlling their fire but were mostly firing blindly. In an attempt to help, the FAPA/DAA reinforced its efforts to find and the strike positions of enemy artillery, but all of these proved ineffective. Not only was the targeting intelligence non-existent due to the lack of reconnaissance, but the Angolan pilots were only flying at medium altitudes because of the threat of Stingers, which made their bomb-drops chronically imprecise. If at all, their activities proved more effective in forcing the South Africans to cease firing



T-55s of one of the Cuban armoured brigades deployed in Angola, seen during a field exercise in 1985. Note the lead vehicle is equipped with rollers to clear mines and is crossing a vehicle-laid bridge. (Albert Grandolini Collection)



The activity of supply convoys remained essential for the duration of Operation Salute to October, and thus the FALA exploited every opportunity to ambush them. Unsurprisingly, the Cubans took care to escort caravans hauling fuel, food, and water for elements of the ATS by helicopter 'even' if most of these were moving through western Angola, where the insurgent threat was minimal. This photograph shows a 'Hind' armed with two UB-32-57 pods for unguided rockets passing low over one of the supply convoys. (Albert Grandolini Collection)

and manoeuvring whenever overflowed by enemy fighter-bombers – in order to avoid revealing their positions.

DAA/FAR contingent in Action

As described above, due to the usual differences over strategy and tactics, the Cubans refused to become involved in Operation Salute to October: none of the MMCA's officers was involved in the planning of this offensive, and no FAR units were redeployed from positions along the Fidel Castro Line in an eastern direction. Correspondingly, the DAA/FAR contingent in Angola was not involved in the first month of operations, either. However, as soon as the SAAF became involved, the Cubans were unable to hold themselves back: after all, countering the 'racist South African regime' was the very essence of their presence in Angola. Thus,

on 30 August, six Cuban MiG-21bis pilots commanded by Lieutenant-Colonel Manuel Rojas Garcia arrived in Menongue to reinforce the Angolan unit commanded by Captain José Alexandre Dos Santos 'Celito'. With Rojas Garcia were Captain Ramon Quesada Aquilar, Captain Eduardo Samiento, Captain Roberto Molina, 1st Lieutenant José Amides Ramirez, and 1st Lieutenant Jesus Castro Borges: at least nominally, all were assigned to the Angolan unit. Initially at least, to get accustomed to the local terrain, the Cubans flew only armed reconnaissance, usually armed with UB-16-57 pods, and rarely with FAB-250M-62 bombs. Due to the threat of FIM-92 Stingers, all sorties were flown at an altitude of 2,000 metres.²⁵

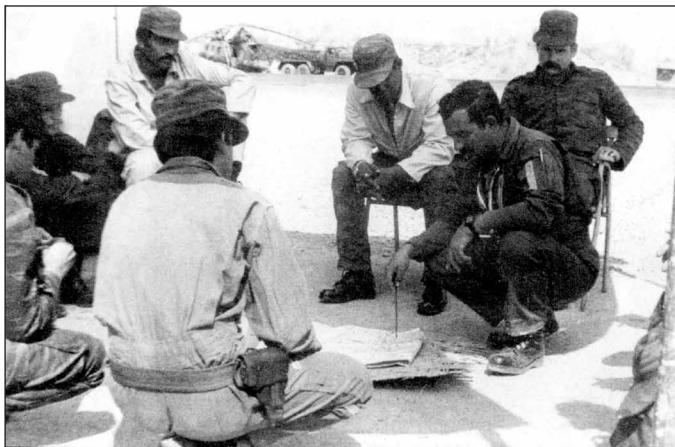
In similar fashion, Cuban MiG-23ML units were kept out of the battle early on. Indeed, for most of July and August, they were still busy working up junior pilots, or flying top cover for Soviet Il-76s that were hauling fuel to Menongue. While they might hear otherwise, the latter type of missions were anything but 'boring': on the contrary, the threat levels were such that the transports would land, deploying decoy flares all the way down, have their cargo quickly re-loaded to cistern trucks, and then depart as soon as possible, deploying decoy flares as they went: supply convoys then had to

forward the fuel all the way to Cuito Cuanavale. Of course, the 200-kilometre road from Menongue to Cuito Cuanavale remained under intense pressure from the insurgents: indeed, several supply convoys were decimated, causing frequent shortages of fuel and ammunition for jets and helicopters based in Cuito Cuanavale.²⁶

That said, once the HQ 6th Military Region did request Cuban help, the commander of the DAA/FAR contingent in Angola, Colonel Carlos Lamas Rodriguez, decided to keep Lieutenant-Colonel González Sarria's squadron in Luanda and Lubango, and instead deploy 10 jets of the second MiG-23ML unit, commanded by Lieutenant-Colonel Trujillo Hernández to Menongue. Moreover, he took care to deploy additional teams of Cuban radar operators. One group went to Menongue, where it operated a combination of PRV-16 height-finder, P-18 and the

Table 13: DAA/FAR ORBAT for Operation Salute to October, July 1987

Wing	Squadron	Base	Notes
DAA/FAR contingent		HQ Luanda	CO Colonel Carlos Lamas Rodriguez
25th RACB		Lubango	CO Lieutenant-Colonel Manuel Rojas Garcia
	MiG-23ML squadron	Luanda, detachment of 6 in Luena	CO Major Eduardo González Sarria
	MiG-23ML squadron	Lubanog, detachment of 8 in Menongue, 2 in Cuito Cuanavale	CO Lieutenant-Colonel Trujillo Hernández
	MiG-21-squadron	six pilots in Menongue, detachment of 2 MiGs and 2 pilots in Cuito Cuanavale	CO Captain Ramon Quesada Aquilar
Helicopter Detachment	Mi-8T	Huambo	CO Lieutenant-Colonel Moya

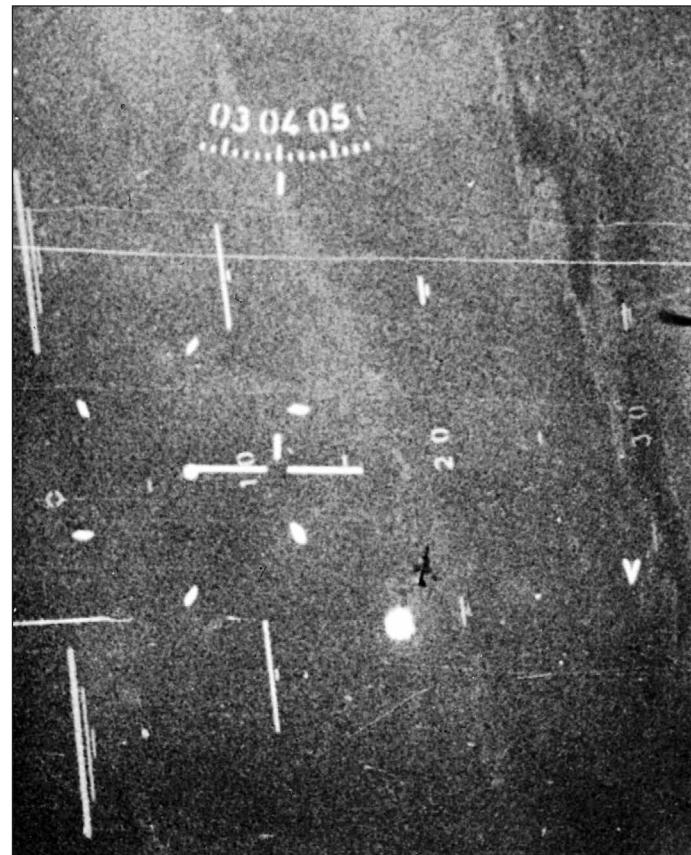


Lieutenant-Colonel Moya (centre right), commander of the Cuban helicopter detachment in Angola (home-based in Huambo as of 1987), in discussion with several of his pilots. (Albert Grandolini Collection)

P-37 radar, and another to Cuito, where the Angolans operated PRV-16, P-18, P-19 and P-37 radars. As usual, the first few days were spent introducing the Cuban pilots and radar operators to the operational zone. Correspondingly, the MiG-21s and MiG-23s flew top cover for supply convoys and for An-12s delivering supplies to Cuito Cuanavale. The first time they overflew the combat zone was when two pairs of MiG-23MLs were tasked with escorting a lonesome Soviet An-30 into a photo-reconnaissance mission all the way to Jamba, around 5 September. Finally, once ready, the Cubans entered the battle by striking two insurgent bases near Mavinga. When feeling the supply and security situation in Cuito had sufficiently improved, Trujillo Hernández and the commander of the Angolan fighter-bomber detachment in Menongue, Lieutenant José Maria Pinelas, then decided to deploy two Cuban MiG-21s, two Angolan MiG-21s, one MiG-21UM, one Su-22UM and two Angolan Mi-17s to Cuito Cuanavale.²⁷

Air Battles

As both sides deployed ever more aircraft into the combat zone, the air war began to heat up. On 10 September 1987, a pair of Angolan MiG-23MLs – piloted by 1st Lieutenant João António da Silva ‘Jojo’ and 2nd Lieutenant Victor Manuel Domingos – was tasked with striking the hospital in Mavinga. The two fliers completed their task undisturbed, but on the way back from the target 310 kilometres away their ground control warned them about the presence of South African jets in the same area. After making several shallow turns enabling them to look back



A still from the gun-camera film shot by Captain Anton van Rensburg, showing 1st Lieutenant João António da Silva's MiG-23ML in a turn and shallow dive – and, right behind it, a bright fireball caused by premature detonation of the Matra R.550 Magic Mk I. Notably, while trying to track the rapidly accelerating MiG, van Rensburg flew a hard, right-hand turn with more than 90 degrees of bank! (SAAF)

and make sure they were not pursued, da Silva and Domingos descended to low altitude and accelerated away, returning safely to Menongue AB. During the post-flight inspection, the ground crew then discovered combat damage on da Silva's MiG: a reconstruction of the mission and radar data lead the Angolans to the conclusion that they had been intercepted by Impala Mk IIs of the SAAF. Of course, this was not the case: actually, they had been intercepted by a much more dangerous opponent: a pair of Mirage F.1CZs, piloted by Captain Carlo Gagiano and Captain Anton van Rensburg, and guided by the SAAF's powerful Plessey AR-3D early warning radar positioned near Rundu AB, in northern South West Africa. Without the two Angolans ever seeing them,

Unclear Claim

While the South Africans concluded that the FAPA/DAA was not flying by night, early in the evening of 23 September 1987, a pair of Angolan-piloted MiG-23MLs was launched from Luena AB with the aim of flying a combat air patrol and weather reconnaissance over the Cazombo salient. The leader of the formation was Captain Sebastião Domingos João Pedro Catémuvua: as now usual, his jet was armed with two R-24s and two R-60MKs – the latter being the latest variant of this small, short-range, infrared homing air-to-air missile. The MiG-23ML flown by his wingman, 2nd Lieutenant Carlos Manuel Politano, was armed with four R-60MKs only. Eventually, the two detected a single helicopter underway at low altitude about 100km east of Lucusse. As usual, Pedro Catémuvua attempted to engage first: however, his Saphir-23ML-III ‘froze’ as soon as the pilot locked-on the target, rendering itself useless. With the leader disengaging in disappointment, Politano dived to attack with a single R-60MK from a very short-range and, seconds later observed a brilliant flash and a fireball lower over the bush. Delighted, the two Angolans returned to Luena to claim a ‘South African Puma’ helicopter as shot down.²⁹

It remains unclear exactly how this target was detected – by the radars of the RA/DAAS, by forward deployed Angolan or Cuban special forces, by Sapfir-23 radars of the two MiGs, or with help of intelligence information – and what exactly the MiGs engaged, or if anything was really shot down. Certainly enough, the Aérospatiale SA.330 Puma helicopters of the SAAF possessed the range necessary to reach the Cazombo salient when operating from the north-eastern South West Africa, and they were, occasionally, sent there – for example to evacuate wounded SADF troops or important UNITA officers. All such flights were undertaken by night, precisely because of the

MiG-threat. However, the SAAF is not known to have sent any Pumas over the Cazombo salient that evening and has never admitted any loss of a Puma, nor any related crews over Angola during this period. Ironically, statements made in a number of South African publications make it clear that the SAAF was ‘sure’ that no MiGs ever flew by night, although both the interception of their C-130s in 1986, and this Angolan claim are clearly indicative of something else being the case. From that point of view it is perfectly possible that a helicopter was shot down, but its loss credited to some other reason, just as it is perfectly possible that the helicopter in question – if shot down at all – was operated by some private venture out of Zambia.³⁰



A still from a video showing one of the Angolan-operated MiG-23MLs returning from a combat air patrol to Luena AB. Clearly visible are an R-24R air-to-air missile under the aircraft's right wing, and an R-60 missile installed on a launch rail under the right intake. Whether one of these jets scored the first-ever aerial victory of the Angolan air force, on 23 September 1987, still remains unknown. (Mark Lepko Collection)



An SA.330 Puma of the SAAF underway over the bush of south-eastern Angola. The flat, featureless terrain of this area caused considerable problems for fighter and helicopter pilots of both sides. Without advanced navigational platforms installed in their aircraft, and extensive experience in navigation over such terrain, many had to use rivers and the few 'roads' (actually little more than dirt tracks) for orientation. (Photo by AJ Venter)

the Mirages approached at a very low altitude, climbed rapidly and attacked. By sheer accident, da Silva made a turn before passing by the Mirages, which van Rensburg exploited to approach and fire two Matra R.550 infrared homing air-to-air missiles: one after the other, both weapons detonated in the hot exhaust of the Angolan's fighter-bomber as da Silva – still unaware of the threat behind him – was diving and accelerating away.²⁸ While significantly boosting the morale of South African pilots, who had been attempting to catch FAPA/DAA's MiGs since early September, this episode fully exposed the complete lack of experience of Angolan pilots in air combat. Nevertheless, they continued flying and fighting.

Chain Reaction

The SAAF returned to the skies over the battlefield to keep up the pressure upon the 47th BrIM and subjected it to strikes from a total of eight Buccaneers and four Mirages on 21 September. In turn, the SA-8 battery of the Osaka Brigade assigned to the 47th BrIM shot down one of the Seeker UAVs, forcing the South Africans to curtail their operations. Four days later, four Mirages flew another Vergooi strike against the 47th BrIM, this time hitting its headquarters, where one officer was killed and several – including two Soviet advisors – wounded. As usual, the Angolan commander promptly requested evacuation of casualties by helicopter and two Mi-17s were dispatched from Cuito. In a rush to get airborne, the two Angolan crews then collided on take-off, grounding both of the last two operational Mils at this base. Learning about the problem, the SMMA scrambled to load two replacement Mi-17s into Il-76s at Luanda International, and then had them flown out to Menongue.³¹ This set in motion an entire chain of dramatic events, that culminated in a major showdown between MiGs and Mirages.

Showdown

Unsurprisingly, the transfer of replacement Mi-17s all the way from Luanda to Cuito Cuanavale took two days to organise. Thus,



The collision of two Mi-17s of the FAPA/DAA at Cuito Cuanavale airport on 25 September 1987 set in motion a chain of events that was to lead to a major showdown between Cuban-flown MiG-23MLs and South African Mirage F.1s. This photograph shows the two badly damaged helicopters. (Albert Grandolini Collection)

it was only mid-way through the afternoon of 27 September 1987 that the Angolans and Cubans were able to launch the recovery of the injured Soviet advisors assigned to the 47th BrIM. To make sure they could prevent any kind of an interception by the SAAF, Trujillo Hernández and Rojas Garcia then set up an ambush for the South Africans: as usual, the two helicopters underway from Cuito were escorted by a pair of Mi-25s flying in trail, and a pair of high-flying MiG-21bis. The latter two were armed with four R-13M missiles each and crewed by highly experienced pilots: Major Rojas Garcia and Captain Quesada Aquilar. Moreover, they were proceeded by four MiG-23MLs from Menongue underway at a very low altitude, so to avoid detection by SAAF radars: if any Mirages or Impalas attempted to intercept the helicopters, they would first run into the Floggers. The plot worked as expected: as the rescue helicopters approached the positions of the 47th BrIM, Rojas Garcia sighted a pair of Mirages far down below. His MiG-21s were unable to intercept because of their slower top speed at low altitude, but he warned the ground control about enemy jets heading in a northern direction. In turn, ground control ordered the MiG-23MLs into action.³²

Closest to the enemy were the jets piloted by Major Alberto Ley Rivas and Lieutenant Juan Carlos Chávez Godoy. At the time the ground control advised them of enemy fighters, they were about 40 kilometres south of Cuito – in an ideal position to intercept any SAAF jets approaching from the direction of Rundu AB in South West Africa. Heading south-east, the two Cubans gradually climbed to 6,000 metres altitude and accelerated to 1,100km/h. As usual, Ley Rivas's jet was armed with R-24s and R-60s, while his wingman had only four R-60MKs on board. On the order from ground control, they powered up their radars when approaching to about 20 kilometres from their targets. Chávez Godoy's system promptly achieved a lock-on: Ley Rivas experienced significant problems with his Saphir-23ML-III. Eventually, his radar failed, leaving the frustrated pilot with no option but to follow the advice of his wingman. Moreover, having no R-24s on board, Chávez Godoy had to wait until within the engagement envelope of his R-60MKs before opening fire. Eventually, Ley Rivas spotted a pair of Mirages as these were just 2,000 metres (2,188 yards) away: less than a second later, the two South Africans flashed past to their left and all four jets made sharp, left-hand reverse turns. The two MiG pilots both switched their radars to the dogfight mode, in which the radar was set to lock-on automatically to the first target it acquired, enabling them to open fire more quickly. In air combat, milliseconds are frequently decisive and this was to be confirmed in this case beyond any doubt.

Unknown to the South Africans – who regularly trained supersonic air combat manoeuvring – contrary to



Major Alberto Ley Rivas, the victorious Cuban pilot from the clash with two SAAF Mirage F.1s on 27 September 1987. Visible in the rear is the cockpit section of the MiG-23ML serial C409 (the jet flown by González Sarria during his intercept of two SAAF C-130s in April 1986). During his successful engagement with Mirages, Ley Rivas flew the MiG-23ML C443, which was subsequently decorated with a red star as a kill marking. (Verde Olivo)

earlier MiG-23 variants, high-speed turns were a discipline in which the new MiG-23ML easily outmatched the Mirage F.1. Moreover, the two Cubans were armed with the latest R-60MK missiles, with a front-aspect attack and high off-boresight tracking capability. Finally, they entered the engagement with their master arm switches on, and the missile launch button depressed, so that the seeker head of the captive missile would automatically lock-on to the target. The outcome was thus inevitable: no sooner had Ley Rivas rolled out of his turn, when his radar achieved a lock-on against a Mirage that was still mid-way through its turn. The Cuban promptly fired and watched his R-60MK flying away to explode next to the target, apparently causing considerable damage. Without waiting to see what became of their opponents, both MiGs continued north, accelerating away in the process.

Actually, the R-60MK did not work perfectly. Because the Mirage F.1CZU serial 206, piloted by Captain Arthur Piercy was still in its high-speed turn, and Rivas's MiG was rapidly approaching, the missile's seeker head was barely able to track the target. Instead of scoring a direct hit, it passed close by, the warhead activated by the proximity fuse about a millisecond too late. By then, the missile was already adjacent to the rear section of the Mirage: nevertheless, it sprayed its fin, horizontal stabilisers, the housing for the braking parachute and the engine with shrapnel, causing extensive damage, including the loss of hydraulic fluid. Piercy managed to nurse the stricken jet all the way back to the Rundu AB, but with no hydraulics or braking parachute, he overshot the runway and hit the ground on the far side of the perimeter track: the shock of impact caused his ejection seat to fire and eject the pilot towards the front, and then failed to



Two Cuban officers in front of a fully armed MiG-23ML of the DAA/FAR contingent. Notable behind the lady to the right is the front section of an R-60MK infrared homing air-to-air missile: the weapon deployed by Rivas to – de-facto – shoot down the Mirage F.1CZ flown by Piercy. (Verde Olivo)



The rear section of Piercy's Mirage F.1CZ serial 206, seen after the landing and showing extensive signs of damage. The aircraft was written off and its rear section used to repair and return to service the Mirage F.1CZ 205, damaged in an accident. (SAAF)

separate in time. Ultimately, both the pilot and the Mirage were invalidated out of service.

Rivas and Godoy were meanwhile preoccupied with other issues: after dashing to the combat and out of it at supersonic speed, both were short on fuel and forced to divert to Cuito Cuanavale. It was only hours later they returned to Menongue

– to be welcomed by other pilots and ground personnel of the squadron. In celebration over their success, the MiG-23ML flown by Rivas, serial number 443, was decorated with a single red star as a kill marking.³³

Consequences

This short clash between MiG-23MLs and Mirage F.1CZs from 27 September 1987 had profound effects – foremost for the SAAF. Realising their available technology was outmatched by the opponent, the South Africans scrambled to obtain better air-to-air missiles, advanced radar warning receivers and electronic countermeasure systems for their aircraft. Unless these were available, not only were all the F.1CZs restricted to flying air defence and escort sorties: essentially, the involvement of the entire South African Air Force in Angola would be reduced to low altitude strikes by Mirage F.1AZs and Buccaneers. To make things even more complicated, they experienced another setback late on 26 September 1987, when the SA-8 SAM battery assigned to the 21st BrIM shot down another Seeker. Even if the Angolans needed several missiles to actually hit the slow UAV (SA-8s were not equipped with proximity fuses), this – apparently the third loss of a precious UAV in a month – forced the SAAF to completely withdraw the system from the battlefield. Needless to say, the Angolans and their allies promptly noticed that the precision of their enemy's artillery barrages decreased by a magnitude, as commented by Piotr Pavlovich Bondarenko:

The South Africans were using guided reconnaissance drones equipped with video cameras.... Once, when a drone appeared over our brigade, we could hear a faint noise, as it was travelling at a height of up to three kilometres. One of our gunners aimed and the drone was shot down. We were immensely happy. After that, the bombardment continued, but we no longer had as many casualties, as the enemy was unable to aim their guns as accurately as before.³⁴

However, by then the situation on the ground was developing in favour of the South Africans and the insurgency. After more than a month of almost constant exposure with superior firepower of the SAAF, the 20th Brigade SADF and the FALA, by early October 1987 the South Africans assessed the 21st BrI and the 47th BrIM as down to about one third of their original strength and completely exhausted. Nevertheless, the High Command FAPLA was still hoping to resupply its units and then renew the advance over the Lomba River. Correspondingly, the isolated 47th BrIM was ordered to pull back to the southern bank, and – because it lacked the necessary bridging equipment – ‘just’ construct a causeway with help of trunks: in turn, the 59th BrIM was to approach from the north, and drop a bridge over the river to affect a link-up. Meanwhile, the 16th BrI was ordered to join the 21st BrI, which had already moved west into a position from which it could support the 59th BrIM. Finally, on 1 October,



One of the IAI Seeker UAVs (or, in the military terminology of the 1980s: a 'remotely piloted vehicle') of the SAAF seen during the pre-deployment testing. Notable is not only the zoom of the camera, visible protruding on the underside of the UAV's fuselage, but also the truck carrying the control module. (SAAF)

the 47th BrIM moved out of its well-entrenched position to the southern bank, regrouping its remaining troops and about 100 vehicles within a box 1,200 metres long and 800 metres wide: working feverishly, the troops of the two units then constructed the causeways, and the pontoon bridge over the Lomba River was, finally, ready on the evening of 2 October 1987.³⁵

South African COMINT/SIGINT not only tracked all these developments very closely, but one of the SADF's forward artillery observer teams had meanwhile reached a position on the high ground nearby, with a perfect view of the construction site of the bridge and the surrounding area. The opportunity was promptly exploited and during the night from 2 to 3 October, the 47th BrIM – which had no opportunity to properly entrench pending its withdrawal to the northern bank – was subjected to a murderously precise barrage by G-5s and MRLS. Moreover, after stopping operations for a few days to analyse reasons for and consequences of the loss of Piercy's interceptor, Mirage F.1s were back in action to hit the 47th BrIM, on the morning of 3 October, and then followed with another air strike on the 59th BrIM, later during the day. The stage was thus set for the coup de main.

The Lomba Slaughterhouse

Approaching from the east in the wake of the air strike by Mirages, Combat Group Charlie – reinforced by the 3rd and 5th Regular Battalions and the 275th Semi-Regular Battalion of the FALA – launched an all-out attack on whatever was left of the unlucky Angolan 47th Brigade south of the Lomba River. The troops of the 47th BrIM still fought back: the infantry was trying to take cover in the vegetation while T-54s eventually slugged it out with South African Ratel-90s at point-blank range, losing one tank after another to the more mobile enemy, while knocking out only one SADF tank-destroyer. The fighting temporarily died down during the early afternoon, as the South Africans withdrew to replenish their ammunition, but then reigned when the Angolans deployed their remaining T-54s and an infantry company for a flanking counterattack. Due to non-existent reconnaissance, this was hit by a flanking attack of the 3rd Regular Battalion FALA. It was this defeat that broke the resistance of surviving FAPLA troops, and then turned their withdrawal into a rout: although a few isolated platoons continued resisting, hundreds of soldiers fled across the floodplain. The result was an almost complete destruction of the 47th BrIM: by the end of the day, only three SA-13 vehicles,

MiG-23 vs Mirage F.1

Comparing the MiG-23 with the Mirage F.1 unavailingly leads to several conclusions, the first of which is that the two types came into being at almost exactly the same time, yet – if it was by designs of their makers – were quite unlikely to ever meet in combat. As described in detail in Volume 3, the MiG-23 was originally envisaged as a fast interceptor with look-down/shoot-down capability, necessary to catch the low-flying, nuclear-bomb-armed fighter-bombers of NATO in the process of entering service during the early 1960s. The type was meant to operate as a part of an integrated air defence system, essentially ‘by remote control’ from the ground, deliver slash attacks with heavy air-to-air missiles, and return to base. Correspondingly, and just like MiG-21 before, it was equipped with a bare minimum of avionics necessary to complete the mission. The canopy was so heavily framed that the pilot had only a very poor view from the cockpit: all the combat-relevant information was to be provided by ground control. The order for its development was issued by the GenStab in 1963, but the progress in development was repeatedly interrupted by ever more requirements, and the type was actually still not ready for production and operational service when these began in 1970. Various design deficiencies and the poor manufacturing quality of its early variants – and especially degraded export sub-variants, like the MiG-23MS – earned the type an awful reputation. Nevertheless, the Soviets manufactured it in huge numbers and continued further refinement: indeed, entering production in 1975, the MiG-23ML as delivered to Angola belonged to the second generation of this prolific family. It incorporated a completely re-designed, lighter airframe, aerodynamic refinements, improved avionics and weapon systems, and the more powerful Khachaturov R35 engine. Even Western intelligence agencies were unaware of its true capabilities before it was encountered for the first time by Grumman F-14 Tomcat interceptors in February 1986 – flown by an entirely new generation of Libyan pilots, trained at home – to take even excellently trained crews of the US Navy by surprise with its much-improved manoeuvrability.

In the mid-1960s, the French Air Force was searching for a new interceptor. Dassault reacted by developing the Mirage F.2, a big, twin-engined jet – that, although successful, soon proved unaffordable. Unimpressed, the company then privately financed the smaller variant, called F.1. Thanks to the highly effective wing design with automatic slats and flaps, a fuselage containing 45 percent more fuel than the Mirage III, and the latest, more powerful SNECMA Atar 9K50 engine, much refined flight controls and an excellent autopilot, better handling at low speeds and better load-carrying capability, this proved attractive enough for Dassault to impress it upon the air force: ironically, the latter introduced it to service as its new high-altitude interceptor, armed with one or two rather old Matra R.530 air-to-air missiles. Like the MiG-23, it was subsequently manufactured in multiple variants, including the interceptor equipped with the Cyrano-IV monopulse radar (F.1C), the fighter-bomber with simplified avionics and no radar (F.1A), a multi-role fighter-bomber with advanced avionics (F.1E), and a two-seat conversion trainer (F.1B). South Africa was one of the first customers, and the SAAF purchased 16 F.1CZ interceptors

and 32 F.1AZ fighter-bombers, with first deliveries taking place in 1975.

Poison Dwarf

In a direct comparison, the MiG-23ML not only had a much more powerful engine, far better acceleration and climb speed, but was refined to a point where it could pull harder turns, and thus outturn the Mirage F.1. Despite problems with the R-24 missiles, it was actually far better armed – if for no other reasons than thanks to the little Molniya R-60 (ASCC/NATO-codename ‘AA-8 Aphid’) missile. The R-60 was developed as a highly manoeuvrable, short-range, infrared homing weapon that would decrease deficiencies in manoeuvrability of early MiG-23s. Weighing only 44kg (97lbs), it had a minimum range of only 300m (330 yards) and maximum range of only 4,000m (4,400 yards), but could be fired from an aircraft manoeuvring at 9gs and track targets manoeuvring at up to 8gs. The upgraded variant, the R-60M – and its export variant, the R-60MK – was a true ‘poison dwarf’. It not only proved capable of surviving poor handling by ground crews but also used a nitrogen-cooled seeker and the *Kolibri* active radar fuse, greatly expanding its engagement envelope (including the front-aspect capability) and lethality, as proven in several air combats over the Middle East in the 1980s.³⁶

On the contrary, air-to-air missiles were a discipline where the South Africans had a tradition of endless problems. Certainly enough, they bought 50 R.530s for their F.1CZs, but these proved disappointing during testing and are not known to have ever been deployed in combat over Angola. Shortly after collecting the brand new Mirages in 1977, the RSA was subjected to an arms embargo imposed by the United Nations: the then brand new and excellent Matra Super 530F medium-range, semi-active radar homing missiles that became available four years later, thus remained out of the reach of the SAAF.

Theoretically, this should have been no issue because in 1965 the Kentron company launched the development of home-made air-to-air missiles. The V.1 and V.2 were copies of the US-made AIM-9B Sidewinder, of which the later was made of parts entirely manufactured in the RSA but produced only in small numbers. Moreover, in 1973, the South Africans acquired a pre-production Matra R.550 Magic, and concluded it as better than the AIM-9B: the result was the development of the Kentron V.3 Kukri, the B-variant of which entered production in 1979. All the V.3B Kukris fired during air combats with Cuban-flown MiG-21s over Angola in 1981 and 1982 missed their targets, prompting the development of the much-improved V.3C Kukri. Although entering production in 1986, this reached operational service only in 1990.

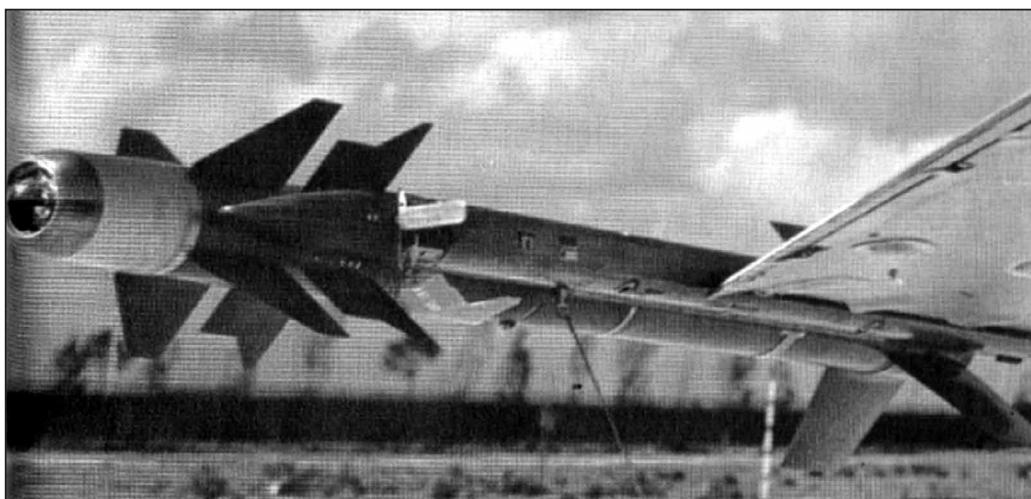
Meanwhile, the SAAF had clandestinely acquired 100 R.550 Magics: however, these still lacked a front-aspect capability, and – as clear from air combats in September 1987 – tended to prematurely detonate in the hot exhaust of the target, causing too little damage to score any kind of a kill. As a consequence, the Mirage F.1CZs and F.1AZs of the SAAF went into combat during this period hopelessly outgunned, and – apparently – with their pilots entirely oblivious of this fact. After the loss

of Piercy's Mirage, on 27 September 1987, the SAAF realised that it was out gunned, out turned and out run by the MiG-23s. Pretoria then rushed to buy 50 Israeli-made Python Mk IIIs, later the same year. However, these entered service only

in 1989 (under the designation V.3S Snake) – too late to change the situation in the skies over southern Angola. For all practical purposes, the SAAF and the SADF thus fought the rest of the war against an opponent that was clearly dominating the skies.



The evolution of South African air-to-air missiles, from the AIM-9B Sidewinder (bottom), via the V.2, V.3A to V.3B Kukri (top). (Darren Olivier/African Defence Review)



A Matra R.550 Magic Mk I seen installed on the wingtip launch rail of a Mirage F.1. (Matra/Euromissile)



A R-23R (top) and a pair of R-60M air-to-air missiles installed on a MiG-23M. (Photo by Piotr Butowski)

two BTR-60s, two trucks, and a single Land Rover reached the safety of the northern bank: 16 T-54s, 24 BTR-60s, 3 BMD-1s, 3 BM-21s, 3 D-30 howitzers, 12 mortars, 30 SA-7 MANPADs and a complete SAM battery of four SA-8s was lost – the latter almost intact, and together with its BTR-60PU command vehicle and its P-19 radar. Embedded with the 47th BrIM was Soviet 2nd Lieutenant Igor Anatoliyevich Zhdarkin, who recalled the terror of the final moments on the southern bank as follows:

The loudly proclaimed promises about the safety of Soviet advisors and specialists were forgotten. The BTR-60PB armoured troop carrier of the Soviet advisors departed, last but one, over the bridge; by order of the brigade commander it was done without cover, and it was protected by only eleven people. Within 15 minutes, the position where it had been before was exploded by a South African AML-90 armoured troop carrier [sic]. There was terrible panic and confusion all around. The South Africans were shooting all over the place, not sparing ammunition. No one knew clearly whether to run or what to do. The one thing everyone wanted was to get across to the other bank as fast as possible. The so-called ‘commissioner’ for organising the crossing was one of the first to escape. [...] The Soviet advisors had to abandon their armoured troop carrier and set it on fire, and then they crawled, hugging the ground, for 1.5 km along the shona to the other bank of the Lomba. They crawled under fire, throwing away everything except their weapons, while the South Africans fired straight at them. Then the swamps began. Our men overcame this too and there remained only a short distance to the bank. Completely exhausted, they decided to pause for breath. The South Africans had guessed from the time lapse that they had already got across, so they began to shoot along the shore. Shells were exploding 10 to 20 metres from them and three fell into the swamp just five metres away. What saved them was that the shells fell into the swamp and on the shona (which was also sticky and swampy), and sank before they exploded. This was the only reason why no one was wounded, apart from injuries from small fragments.³⁷

Second Lieutenant Igor Anatoliyevich Zhdarkin met the survivors on the northern bank:

When we encountered our comrades from the 47th Brigade, we heard details from them about their brigade’s rout. The brigade suffered three attacks from regular South African forces. The flight, which began after the second attack, turned into panic with the launching of the third. There were many reasons for this. Lack of ammunition; the cowardness of the officers; the absence of precise instructions to the troops engaged; their terror of facing the South Africans; and, finally, the fact that there was a bridge across the Lomba River, just where the brigade stood. Everybody soon found out about it, and if it hadn’t existed, no one would have tried to flee.

Many Soviet specialists serving here in the district combat brigades had been in Afghanistan and had never experienced such horrors before. One said: “When the South African artillery began to fire, I felt particularly terrified. Then came the South African Air Force and we had very little room on the ground. But the worst was when the Angolans turned to flight and began to throw away their equipment....” This was just what happened with the 47th brigade. As long as the brigade

commander maintained radio contact with the commander of the tank battalion, everything remained relatively normal. But then the tank battalion commander was hit and, being wounded, he moved to another tank which was also hit and from which he then could not crawl out. Meanwhile the tank platoon commander who was next to him fled.³⁸

The Dot on the I

While a better part of the 47th BrIM’s officers and other ranks actually survived the battle and rallied to the northern side, this was the end of the brigade: it was unceremoniously disbanded and its remaining elements assigned to other units. Indeed, with this even Operation Salute to October was all but over: on 7 October 1987, the High Command FAPLA ordered the remaining three brigades to withdraw from the Lomba River. The final act of what became known as the Battle of the Lomba River in the West, was covered by 60 air strikes by FAPA/DAA’s MiGs on 6 October 1987. Another 50 combat sorties against the SADF and FALA on the southern bank of the Lomba were launched a day later – with no tangible results, but a painful loss, when the jet flown by 2nd Lieutenant António José ‘Toni do Fumo’ was shot down in the Chimpolo area. Indicating anything but that the Angolan and Cuban pilots releasing their bombs from medium altitude, without attempting to improve precision of their aim by diving low – as frequently claimed in most Western accounts – Chris Hurlin, veteran gunner of the six-vehicle Ystervark battery of the 32nd Battalion, recalled the scene:

We were providing air cover for nearby troops when a MiG-23 came down to bomb a Ratel which had not had time to camouflage after a night of moving around. The MiG stayed low after the engagement to avoid the Singers in the area. The pilot did not realise we were there and that’s why he was in range and close enough for our guns. The Ystervark next to me managed to get off [a] few rounds of APC/HEI, and the MiG went down and crashed into the bush nearby. Lots of books say that a Stinger-team got the MiG. I can definitely say it was our 20mm gun: we saw the traces hit the front of the plane and then it crashed into the bush. It was very low and there was no explosion. At the crash site, the plane had been ripped apart and scattered all over the place. That night, the bombardier and troop sergeant went to the crash site and got the pilot’s helmet and the ID-book from his pocket. He was in fact an Angolan who had died on impact.... The next day a team from Armscor came up from Pretoria to check out the crash site. Even they were surprised that we got one.³⁹

The feelings of the involved Angolan and Cuban pilots over the situation and this loss remain unrecorded: as far as is known at all, those deployed in Menongue were informed about the catastrophe that befell the 47th BrIM only on 11 October 1987. To say this had negative consequences for their morale would be an understatement. Depressed, on 12 October 1987, Rojas Garcia launched from Menongue on a mission of armed reconnaissance, accompanied by 2nd Lieutenant António Jesus, an Angolan pilot. Encountering no opposition, they easily found the combat zone, marked by smouldering wreckage, burned vegetation and dozens of abandoned or destroyed vehicles. For a while at least, the two pilots contemplated diving to destroy some of the heavy vehicles left in the wake of the 47th Brigade, but after not receiving the



A still from a video showing the MiG-21bis serial C306, operated by the DAA/FAR contingent in Angola, and armed with four UB-16-57 pods for unguided rockets. In an attempt to hit back at the FALA and the SADF, the Angolan and Cuban fighter-bombers flew over 150 combat sorties during the last few days of Operation Salute to October. (Mark Lepko Collection)

authorisation to do so from the ground control, they withdrew with all their weapons still aboard.⁴⁰

The End of Salute in October

According to the South African intelligence assessments, Operation Salute to October ended in an outright disaster: between 12 July and 3 October 1987, the FAPLA suffered the loss of 1,056 killed in action, and wrote off 144 armoured vehicles of all types. The mass of related South African publications rarely fail to point out that, in comparison, by 5 October the SADF acknowledged the loss of 17 killed, three Ratels and two Casspirs, while 41 troops were wounded (where it remains unclear if all of the casualties of the 101st Battalion were included in the tally). However, what is next to never mentioned is that the FALA suffered at least as badly as the FAPLA: UNITA subsequently acknowledged the loss of roughly 1,000 killed by 4 October 1987.⁴¹

Thus, while the Angolan armed forces undoubtedly failed in achieving their objectives – and this primarily because of completely unrealistic planning by their Soviet advisors – they actually gave as good as they got. And still, the officers of the SMMA had no doubts about who was to blame, as concluded by Zhdakin:

The reasons for the Angolan defeat back in 1987 can be debated for a long time. The Soviet military advisors (in particular Generals Gusev and Ryabchenko) conducted this operation ably. At first everything worked out beautifully. But the problem was that they planned the campaign in the way they were accustomed to, for Soviet soldiers. A Soviet soldier would have carried it out. But these were Angolans. Cubans or our own soldiers would have accepted and carried out the plan without any problem. But as rumours said, the Cubans told our generals, “Wait, what are you doing, who are you relying on? You’ll have to bank on these Angolan soldiers to do the job.”

Well, our officers had already provided a time frame to fulfil certain objectives by a certain date, to depart on that day at this time for such-and-such a line. This was, of course, pure fantasy. The Cubans warned us, but our advisors did not listen. The Angolan army at that stage was already strong enough to execute its tasks, well prepared and, with the help of Soviet specialists, well supplied with military technology and weaponry. Despite all the blunders in training its staff, the Angolans were prepared to fight, could fight (and actually did fight) quite successfully against UNITA, so the Angolan army’s morale was sufficiently

high. At the start of the operation, there was even a moment when it seemed as if UNITA was on the edge of defeat. With a little more effort, an Angolan victory could have been close. But then the South African army became involved. The Angolans were afraid to fight against them and were not particularly able to do so. The “Buffalo” battalion in general roused them to near-panic, though when we found ourselves encircled the Angolans were able to satisfy themselves that the “Buffalo” soldiers were, after all, not invincible.⁴²

With hindsight, the conclusion is unavoidable: the Salute to October ended with the defeat of the FAPLA. However, the battle was actually only just joined, and the war would go on for years. That part of the story is to be told in the next volume of this mini-series.

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Notes

Chapter 1

- 1 Unless stated otherwise, the following chapter is based on 'Fidel Castro Meeting with Top Aides about the Situation in Angola', 15 November 1987, Wilson Center Digital Archive (henceforth WCDA); 'Arnaldo Ochoa, Report on Visit to Angola', 31 July 1986, WCDA; Gleijes (2013), pp.363-364, 384; Villegas, pp.66-68; Jorge Garcia Cartaya, pp.33-41; Pedro Edy Campos Perales et al, p.92 & Riva, p.276, and all works by Shubin listed in the bibliography.
- 2 Del Pino (1988), pp.1-7.
- 3 Notably, Abrantes (p.196) quotes a delivery of 8 MiG-17Fs in late 1975, and these received serials C-20 to C-27. However, González Sarria's pilot logbook and all known photographs show 10 serials (from C-20 to C-29).
- 4 For precise details on these and all the subsequent acquisitions up to 1985, see Volume 2.
- 5 According to González Sarria (interview, 02/2010), by 1985 the Cuban air force deployed so many of its pilots and ground personnel to Angola, that in turn the Soviet air force had to provide the entire staff of at least one fighter aviation regiment to Cuba as replacement. According to Abrantes (p.181). The last two intact MiG-21MFs wore serials C46 and C53. The C46 was then sent to Cuba for overhauls, but never returned, thus leaving just one out of 12 original MiG-21MFs in the country.
- 6 Abrantes, pp.219-220 & Glória Ramos, pp.82-85.
- 7 Even though the Angolans never purchased any Soviet-made computer-supported ATMS such as Vozdukh-1, Asurk-1, Pori or others (all are known to have been excessively expensive and were rarely acquired even by much richer Soviet clients in the Middle East), they could still coordinate the work of the RA/DAAN and the RA/DAAS thanks to the two radar screens of their P-18 and P-19 radars. One of these was the so-called 'remote screen', which could be fed information from other radar systems (mainly those from the P-35/37 series) either via a cable or a directional communication system like the PR-30-1M (which had a range of 7,000 metres). In this fashion, the operator of one P-18 or P-19 could monitor the feed of multiple radars at least at a tactical level, and then coordinate their work and that of nearby SAM-sites with the help of a radio. In turn, the use of improved long-range radio systems known to have been imported by the Angolans in the mid-1980s enabled similar coordination of multiple local air defence systems at strategic level.
- 8 Abrantes, pp.145-146. According to Glória Ramos (2017, p.164), as of early 1987, the RA/DAAA included a total of seven SA-2 sites, 18 SA-3 systems, 37 anti-aircraft batteries, and a stock of over 4,500 SA-7 missiles.
- 9 Abrantes, p.143.
- 10 Abrantes, p.203. Notably, Abrantes mentioned deliveries of 'Su-20 and Su-22Ms', causing some confusion in corresponding quotations in Volume 3. However, all the available photographs of these fighter bombers in Angola show the Su-22 variant (for details, see the Colour Section).
- 11 The Angolan national airline TAAG did acquire an additional Fokker F.27 in 1976 (registration D2-EMB), and this served also for military purposes. However, that aircraft was eventually flown to Zaire by a defecting crew and was retained there.
- 12 Abrantes, pp.78, 142. According to Abrantes (p.78), some BN-2s were used to spray defoliants on fields where local farmers were producing food for the insurgents, while (p.162) the Soviets had eight An-12s deployed in Luanda on average.
- 13 Abrantes, pp.179-180.
- 14 González Sarria, interview, 02/2010 & Abrantes, p.143.
- 15 Glória Ramos, pp.107-113, 118.
- 16 Developed from Glória Ramos, pp.78-85, 121, 129. Obviously, this ORBAT excludes the Air Group of the DAA/FAR in Angola: as far as is known, this consisted of two units flying MiG-23ML/UBs, one flying MiG-21bis/UMs, and sizeable detachments of pilots and ground personnel assigned to the Angolan units flying MiG-23s, Mi-8/17s, and transport aircraft.

Chapter 2

- 1 Gleijes (2013), p.354.

- 2 Villegas, pp.63-64. Ayacucho, nowadays in Peru, was the scene of the final, decisive battle in the South American Wars of Independence, where Spain's royalist troops were resoundingly defeated by the pro-independence forces in 1824.
- 3 Gleijeses (2013), p.351.
- 4 Gleijeses (2013), pp.345-354, Villegas, pp.63-67.
- 5 González Sarria, interview, 05/2021.
- 6 Lord (2008), pp.327-329.
- 7 'Fidel Castro Meeting with Top Aides about the Situation in Angola', 15 November 1987, WCDA; Glória Ramos, p.151; González Sarria, interview, 02/2010.
- 8 Gleijeses (2013), p.355; Nortje (2012), p.920; Del Pino (2013), p.270.
- 9 González Sarria, interview, 02/2010.
- 10 González Sarria, interview, 02/2010.
- 11 Muckallia (2012, p.204) reports an entirely different composition of the FAPLA forces involved. According to him, the four light infantry brigades involved in the advance on Cazombo were the 3rd, 10th, 13th and 36th.
- 12 Hernández (2012), pp.283-289, 297. Notably, DAA/FAR fighter-bomber and helicopter units deployed in Angola are known to have used three variants of S-5 unguided rockets: the S-5M, S-5K, and S-5KO. The M was a version with a fragmentation warhead, deployed against troops in the open field; the S-5K was used against buildings, and the S-5KO was equipped with an incendiary warhead (Riva, pp.282-284).
- 13 Nortje, pp.920-923, 927; Wilsworth, pp.241-243, 248; Scholz (2013), p.244; Bridgland, p.444; Lord (2008), p.346; Del Pino (2013), p.291. FAPLA's losses are as listed by Nortje (p.927), but can be considered as credible, as the same source's figures for the casualties in the operation by the 6th Military Region have been confirmed by direct FAPLA sources (even if the latter did not mention those from the 3rd Military Region), see Gleijeses (2013), p.359.
- 14 Conclusions based on reporting by Abrantes (p.158) and Glória Ramos. Indeed, Abrantes pointed out that it was the commandos of the 5th Reconnaissance Regiment SADF involved in Operations Agony and Catamaran-2 that shot down the BN-2 and the Mi-17.
- 15 Unless stated otherwise, this sub-chapter is based on 'Cuban Military Mission in Angola: Report on Combat Operations', 18 October 1985, WCDA; Gleijeses (2013), p.355; Glória Ramos et al, pp.133-134, 242 & González Sarria, interview, 02/2010.
- 16 The extent and intensity of operations by SAAF C-130s and C.160s is best summarised by the known statistics. They flew a total of 298 tonnes of rockets and mortar ammunition to Mavinga during Operation Magneto: just during the night of 29 to 30 September 1985, three C-130s delivered 336 127mm rockets and 250 cases of ammunition for 120mm mortars. During the following days, South African transports then hauled in ammunition for 32nd Battalion's 81mm mortars. Eventually, this effort enabled the SADF's two Valkiries to conduct 37 fire missions, and lob 3,240 rockets at enemy positions.
- 17 Abrantes, p.118 & Rojas Garcia (2019), pp.297.
- 18 Lord (2008), p.403.
- 19 González Sarria, interview, 02/2010. The Soviet pilots serving as advisors to the Angolan Su-22 unit were Nikolay Adonin, Viktor Tarasov, Yuri Maznichenko, and Sergey Arent.
- 20 González Sarria, interview, 02/2010. In theory, the DAA/FAR contingent could have deployed both of its MiG-23 squadrons to Menongue AB, and then fly these so intensively over the battlefield that they would maintain an uninterrupted presence, in turn deterring the South Africans from flying. However, the cold fact was that the number of aircraft deployed at Menongue was limited by the amount of supplies that could be delivered to a base so distant from Namibe, and by the security situation. In other words: such mass deployment would require a resupply effort of the kind neither the FAR nor the FAPLA could run at the time, while exposing the precious aircraft to a possible counter-strike – either by the SAAF from the sky, or by the FALA on the ground.
- 21 'Cuban Military Mission in Angola: Report on Combat Operations', 18 October 1985, WCDA; Del Pino (2013), p.297; Sholtz (2013), p.244; Nortje (2012), pp.923-926; Lord (2008), p.355; Lord (2000), p.169; Wilsworth, pp.243-245.
- 22 Lord (2008), p.355.
- 23 González Sarria, interview, 02/2010; Abrantes, p.187 & Glória Ramos et al (2017), p.136.
- 24 Abrantes, pp.69, 118; Louw et al, p.220; Lord (2008), pp.353-357; Hooper (2002), pp.27-30.
- 25 Glória Ramos, p.136. Notably, while Lord (2008, p.356) quoted top cover by two MiG-23s, Abrantes (pp.119), quoted a pair of MiG-21s. Two Cuban-flown MiG-23MLs reached the engagement zone only minutes later.
- 26 Glória Ramos, pp.148.
- 27 Abrantes, pp.69-71, 117-122; Glória Ramos, pp.77, 114-115, 147-148; Lord (2008), pp.357-358.
- 28 Based on Abrantes and Glória Ramos.
- 29 González Sarria, interview, 02/2010.
- 30 Gleijeses (2013), pp.357-359; Georg, p.195; Glória Ramos et al (2017), p.151; Glória Ramos (2018), pp.426, 428-429; Nortje (2012), pp.926-928; Bridgland, pp.444-445; George (2005), pp.194-195; 'Cuban Military Mission in Angola: Report on Combat Operations', 18 October 1985, WCDA.

Chapter 3

- 1 Stadler, pp.218-219.
- 2 Lord (2008), p.358; Abrantes, pp.104, 162-163, 238, 291 (Abrantes once dated this MiG-23-loss with 3 and once with 5 December, i.e. after the Mi-17 was shot down, but also – on p.112 – stated that Kotonov was flying a Mi-25 when shot down); Stadler, pp.205-210, 216-220, 279, 317. Notably, Del Pino (2013, p.449) quoted Viera's loss as related to flying top cover for a road convoy. Furthermore, emboldened by this success, the SADF then decided to infiltrate two teams of commandos into Angola, with the aim of attacking one of the enemy air bases. Undertaken in 1987, both attempts failed: Operation Abduct 1, in early 1987, was conducted by the 5th Reconnaissance Regiment against Menongue, by night, but found no fighter-bombers of the FAPA/DAA based there. The second attempt was undertaken against Lubango, late the same year, but that time the two operators involved were detected by the guards while in the process of placing explosive charges on one of MiG-21s and forced to flee before being able to complete their mission. As usual, both attacks were officially claimed as undertaken 'by UNITA'.
- 3 Shubin (2014), p.32.
- 4 Nortje (2012), pp.933-940; Shubin (2014), pp.10, 31-32.
- 5 Alfonso Doval, interview, 08/2009.
- 6 González Sarria, interview, 02/2010. Notably, the R-24T passed so close to the targeted C-130B, that it left scorch-markings on its lower left wing-surface, roughly mid between the two engines. Moreover, upon learning of his engagement, the officials in Luanda were delighted to boast of the downing of a 'South African Hercules'. Over the following years, their story was accepted by multiple Russian researchers, all of whom repeated the claim of the downing of an SAAF C-130 without any further cross-examination. When, in the mid-1990s, it became known that the South African Air Force had never lost a single Hercules during the entire Second Angolan War, the same researchers began claiming that the MiG-23ML in question (the name of the pilot was never mentioned), either shot down a Lockheed L-100 – a civilian variant of the Hercules – operated by one of the CIA's front companies, or an L-100 on lease to the Angolan government. Actually, González Sarria never made a claim for a kill, and in his interview with the authors of this project he explicitly stressed that his missile missed its target. His related reports were not only confirmed by the fact that no wreckage of any potential target was ever found, but also during his meeting with a group of veteran SAAF pilots in South Africa in 2014.
- 7 Unless stated otherwise, based on Markovskiy et al, *Soviet Aviation Rockets Air-Air*, pp.30-35 & González Sarria, interview, 04/2021.
- 8 Glória Ramos, pp.136, 139.
- 9 Nortje (2012), pp.959; Georg, pp.196-198; 'Memorandum of Conversation between Fidel Castro and Konstantin Kurochkin', 8 September 1986, WCDA. Notably, Nortje added that the 32nd Battalion SADF was deployed in the Cazombo salient and helped stop the 43rd and 45th BRILs. However, according to the Cuban and Soviet sources, these two brigades were involved in the advance from Lucusse on Lumbala-Nguimbo.
- 10 González Sarria, interview, 02/2010 & Abrantes, p.239.
- 11 González Sarria (2003), p.165.

- 12 Abrantes, p.238; Glória Ramos, p.242; Nortje (2012), pp.959; Georg, pp.196-198; ‘Memorandum of Conversation between Fidel Castro and Konstantin Kurochkin’, 8 September 1986, WCDA.
- 13 The development of the G-5 long range howitzer is to be covered in detail in the forthcoming volume of the Middle East@War series *al-Hussein*. It is sufficient here to say that this was originally based on the CG-45 design by Canadian engineer Gerald Bull. Working in cooperation with Armaments Corporation of South Africa (Armscor), and with Iraqi funding, Bull aimed to develop an artillery piece that would outrange all field-guns of Soviet origin. The result was a howitzer capable of lobbing normal ammunition over 30 kilometres (19 miles), but also reaching up to 40 kilometres (25 miles) with base-bleed shells, or 50 kilometres (31 miles) if using rocket-assisted rounds. Furthermore, the G-5 was provided with a small auxiliary power unit, which enabled the 13,750kg (30,314lbs) piece to move over short distances without help of a towing truck, and thus avoid any kind of counterbattery fire.
- 14 Shubin (2014), p.54.
- 15 Nortje (2012), pp.947-949, 954-958; Willsworth, pp.247-248, 252, 257-260; Shubin (2014), pp.35, 46-54.

Chapter 4

- 1 Steyn et al, pp.43, 51, 65-66, 72-73.
- 2 Glória Ramos, pp.76-77; Steyn et al, pp.280-281, 293; Fontanellaz (2018); Shubin (2008), p.72.
- 3 Shubin (2008), p.72.
- 4 Steyn et al, pp.130-131, 176, 196-197, 203, 215-220, 228-229, 274-275, 279-281, 287-295, 303, 311, 318, 323, 328-341, 347.
- 5 González Sarria, interview, 02/2010 & Hernández (2012), pp.307-314. Details on González-Perez’s loss from Abrantes, p.239.

Chapter 5

- 1 Unless stated otherwise, this sub-chapter is based on ‘Memorandum of Conversation between Fidel Castro and Konstantin Kurochkin’, 8 September 1986, WCDA; Carlos Paulino, ‘A Batalha que libertou a região e precipitou a queda do apartheid’, *Jornal de Angola*, 23 March 2019; Nortje (2012), p.985; Shubin (2011), pp.25, 121; Shubin (2014), pp.63-65, 106-108, 137, 145-146, 157, 166-167, 204-205; Gleijeses (2013), p.395; da Glória Glória Ramos, p.165.
- 2 Shubin (2011), p.25; Villegas, p.70; Gleijeses (2013), pp.374-375; Georg, p.200.
- 3 Shubin (2014), pp.36-37.
- 4 Riva, p.209.
- 5 Glória Ramos, pp.101-104; Abrantes (2019), pp.91-94. First commander of the PC-9 squadron was 2nd Lieutenant Rui de Jesus Cardoso.
- 6 Unless stated otherwise, this sub-chapter is based on Shubin (2011), pp.171, 174-178.
- 7 Shubin (2011, pp.174-176), quoting Anatoliy Eduardovic Alekseevsky, stressed that the MRLS in question must have been SADF Valkiris, because they were firing ‘typical 24-round volleys’. However, there is no confirmation of such a deployment at that point in time in any known South African sources. That said, the 107mm rounds deployed by the FALA with its Type-63s were of South African manufacture and proved far more effective than their Chinese originals. This is the most likely explanation for the Angolans and Soviets becoming convinced they were facing Valkiris.
- 8 Notably, while Alekseevsky – embedded as advisor to the HQ of the 3rd Brl – mentioned multiple ‘Mirage-strikes’ against the FAPLA unit, no available South African publications mention any operations of the SAAF Mirage F.1AZ/CZ (or other fighter-bombers) over the Moxico province at the time of this battle.
- 9 Steenkamp (1989), p.150; ‘Fidel Castro Meeting with Top Aides about the Situation in Angola’, 15 November 1987, WCDA; Heitman, ‘Operations Modular and Hooper, 1987-1988’, www.rhodesia.nl, 23 December 2019.
- 10 Georg, p.200; Shubin (2011), pp.25-26; Nortje (2012), p.983; Scholz (2016), p.6.
- 11 Shubin (2014), pp.64-65, 86.
- 12 Shubin, pp.72, 76, 82-87; Lord (2008), p.398; Georg, p.203.
- 13 Notably, in Angola, SA-6s were operated exclusively by FAPLA units, never by BDAs of the FAPA/DAA – which is why relatively little is known about their combat operations.
- 14 ‘Memorandum of Conversation between Fidel Castro and Konstantin Kurochkin’, 8 September 1986, WCDA; Miguel Junior (2015), p.115; Shubin (2011), p.179; Shubin (2014), pp.204-209.
- 15 Scholz (2010), pp.79-81; (2013), pp.254-266; (2016), pp.6-9; Nortje (2012), p.984.
- 16 Scholz (2013), pp.263-266; Nortje (2012), pp.985-989.
- 17 Reconstructed on basis of Scholz (2013), pp.264-266; Bridgland (2017), p.93; Wilsworth, pp.264-264, 270; Mannall, p.154; Nortje (2012), p.993; de Vries, p.561.
- 18 Shubin (2014), pp.92-96; Nortje (2012), pp.987-988; Gleijeses (2013), p.395; Mannall, p.142; Scholz (2016), pp.8-10. Conclusions about the lack of reconnaissance by Angolans and Soviets are based on cross-examination of reports by these and other available sources: essentially, no kind of reconnaissance activity south of the Lomba River is mentioned in any kind of report or publication released by the Angolans, Soviets, and Cubans since.
- 19 Nortje (2012), p.989 & Bridgland (2017), p.88. Notably, the quotation from Nortje indicates a Bosbok flying at an altitude of 8,000ft, or 2,438m. However, such an altitude was unlikely for a forward air observer underway by night. Moreover, Bridgland quotes the – more likely – altitude of about 1,000m, or 3,280ft. The exact range from the SA-8 SAM battery that scored this kill remains unknown. The reference here to an RPG-7 is obviously in error and Fourie may have meant an SA-7.
- 20 Bridgland (2017), pp.93, 143, 145; Nortje (2012), pp.990-991.
- 21 Wilsworth, pp.267-277; Scholz (2016), pp.10-11; Scholz (2013), pp.268-269; Bridgland (2017), pp.98-98; Nortje (2012), pp.995-997; ‘Fidel Castro Meeting with Top Aides about the Situation in Angola’, 15 November 1987, WCDA.
- 22 Bridgland (2017), pp.108-114; Nortje (2012), pp.998-1005; Scholz (2013), pp.269-272; Scholz (2016), p.11. Notably, the shock of fighting FAPLA tanks caused sufficient unrest within the 101st Battalion that 47 troops were subsequently discharged from military service. Moreover, David Mannall (in Mannall, p.158), a soldier of the 61st Mechanised Battalion, reported that bodies of several soldiers killed in one of the destroyed Casspirs were still inside the wreckage, days later.
- 23 Bridgland (2017), pp.155-158; Mannall, pp.162-165; Nortje (2012), p.1007; Scholz (2013), pp.272-273; Lord (2008), p.403.
- 24 Perez Cabrera, p.443; Gleijeses (2013), p.369; ‘Fidel Castro Meeting with Top Aides about the Situation in Angola’, 15 November 1987, WCDA; Jiménez Gomez; Rubén, pp.44, 52, 92.
- 25 Rojas Garcia (2019), pp.15-19.
- 26 Rojas Garcia, pp.22-23.
- 27 Glória Ramos, pp.345-346; Hernández (2012), pp.333-339. Without providing further details regarding dates, Hernández pointed out that the FALA quickly got wind about this deployment and attempted to attack the barracks where Angolan and Cuban pilots were housed. Shortly before being detected and forced to withdraw, the insurgents managed to seriously injure Captain Metódio Dimulundy, the commander of the combined Angolan-Cuban detachment: he had to be evacuated by helicopter to Menongue.
- 28 Hernández (2012), pp.345-346; Lord (2008), pp.402-403.
- 29 Abrantes, p.249 & Glória Ramos, pp.243. Over the last 30 years, this claim was repeatedly republished in the specialised press of Russia and Ukraine, and usually declared as scored by the Cubans – apparently because the local researchers never managed to establish the names and nationality of the Angolan pilots involved. Moreover, Russian sources have usually taken this claim at face value and consider it ‘confirmed’.
- 30 Lord (2008), pp.400-407.
- 31 Bridgland (2017), pp.86-88; Nortje (2012), p.989; Scholz (2013), p.266; Lord (2008), p.400; Rojas Garcia (2019), pp.26-29.
- 32 Rojas Garcia (2019), pp.26-29.
- 33 Hernández (2012), pp.351-358; Lord (2008), pp.405-406.
- 34 Shubin (2014), pp.4041; Bridgland (2017), pp.86-88; Nortje (2012), p.989; Scholz (2013), p.266; Lord (2008), p.400. According to Lord (2000, p.206), the FALA reported the Angolans spent 16 missiles to shoot down this seeker. The insurgents then found the wreckage but spent several days searching for the pilot – because they did not know the aircraft was unmanned.

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Adrien Fontanellaz, from Switzerland, is a military history researcher and author. He developed a passion for military history at an early age and has progressively narrowed his studies to modern-day conflicts. He is a member of the Scientific Committee of the Pully-based Centre d'Histoire et de Prospective Militaires (Military History and Prospectives Centre), and regularly contributes for the Revue Militaire Suisse and various French military history magazines. This is his 11th title for Helion's @ War series.

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José Matos is an independent researcher in military history in Portugal with a primary interest in the operations of the Portuguese Air Force during the colonial wars in Africa, especially in Guinea. He is a regular contributor to numerous European magazines on military aviation and naval subjects and has collaborated in the major project *The Air Force at the end of the Empire*, published in Portugal in 2018. He has recently written two books in Portuguese on the former regime's relations with South Africa and on the Portuguese attack on Guinea-Conakry in 1970. This is his first instalment for Helion.

Tom Cooper

Tom Cooper is an Austrian aerial warfare analyst and historian. Following a career in the worldwide transportation business – during which he established a network of contacts in the Middle East and Africa – he moved into narrow-focus analysis and writing on small, little-known air forces and conflicts, about which he has collected extensive archives. This has resulted in specialisation in such Middle Eastern air forces as of those of Egypt, Iran, Iraq, and Syria, plus various African and Asian air forces. In addition to authoring and co-authoring about 50 books – including about three dozen titles for Helion's @War series – and well over 1,000 articles. Cooper has been the editor of the five @War series since 2017, and this is his 34th book for Helion.

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- 35 Scholtz (2013), p.273; Bridgland (2017), p.120; Wilsworth, p.278; Nortje (2012), p.1008.
- 36 While Russian reports about the success of the R-60M in air combats over Lebanon of 1982 remain unconfirmed, there is little doubt that the weapon fared very well during the Iran-Iraq War. It was used to score the first definitely confirmed kill for the MiG-23ML when, on 11 August 1984, a young Iraqi pilot shot down the F-14 Tomcat flown by the top Iranian air warfare tactician, Colonel Hashem All-e-Agha (for details, see Cooper, *MiG-23 in the Middle East*).
- 37 Shubin (2011), pp.40-42.
- 38 Mannall, pp.176, 179-189, 199, 217; Bridgland (2017), pp.159-165, 169-170, 173, 176; Nortje (2012), pp.1008-1009; Scholtz (2013), p.274-277; Gleijeses (2013), p.397; Wilsworth, p.283; Shubin (2014), p.98.
- 39 Abrantes, p.187 & Hurlin, interview, 04/2021. Notably, contrary to the Angolan sources, the South Africans were sure they had shot down a

MiG-23, not a MiG-21. Sadly, the few available photographs of the wreckage of this jet concentrate on its drop tank and thus do not enable a clear identification of its type.

- 40 Rojas Garcia (2019), p.30.
- 41 Shubin (2014), pp.98-99; Scholtz (2013), p.277. Notably, Bridgland (p.199) mentioned that in addition to the SA-8s, the SADF captured 12 BTR-60s, two BM-21s, two BMP-1s, two D-30s, four ZU-23s, and several T-54s, all of which would have been handed over to UNITA. The authors find the figures provided in 'Fidel Castro Meeting with Top Aides about the Situation in Angola' (15 November 1987, WCDA) more complete though.
- 42 Shubin (2011), pp.152-153.